Environmental Resource Management at the Urban Interface: Social Monitoring in Waterloo, Ontario

by

Anna Marie Cipriani

A thesis presented to the University of Waterloo
In fulfillment of the thesis requirement for the degree of
Master of Arts
in
Planning

Waterloo, Ontario, Canada, 2009

AUTHOR'S DECLARATION

I hereby declare that I am the sole author of this thesis. This is a true copy of the thesis, including any required final revisions, as accepted by my examiners.

I understand that my thesis may be made electronically available to the public.

ABSTRACT

The purpose of this research is to measure impacts on environmental constraint areas due to the presence of new suburban populations, to assess attitudes and behaviours of residents toward greenspaces incorporated into the design of the community and to attempt to project if the City of Waterloo's vision for suburban development in the proximity of environmentally sensitive lands is being realized. Analysis includes the results of a mail survey for a sample of 600 households from three subdivision developments on the West Side of Waterloo, stratified according to the proximity to an environmentally significant forest in the study area. Similar questions posed to the sampled West Side residents were also included in the biennial *K-W Area Study 2005* which included 2000 households in order to acquire a level of comparison between residents living on the West Side of Waterloo and the rest of the twin cities. Unstructured, open-ended interviews were conducted to gain insight into the normative practices, beliefs, and value structures of residents. Observational fieldwork data of the study area highlights encroachment and environmental stewardship in the environmentally sensitive area. Findings and conclusions suggest a very positive citizen response to the inclusion of an environmental amenity in the subdivision design but at the same time a continuation of adverse environmental impacts resulting from population growth, and minimal suburban lifestyle change in this community which aspired to incorporate the principles of new urbanism.

ACKNOWLEDGEMENTS

I would like to extend my gratitude to my supervisor Dr. Keith Warriner for his kind and skillful guidance through this experience of graduate level learning. Your interest and dedication to this work made this opportunity possible.

To my committee Pierre Filion and Laura Johnson for their review of this work and guidance to the finish line – thank you for your time and effort in supporting this work.

To my husband Andrew Scheifele for his unwavering encouragement and support through this process. Now you may receive that honourary degree you've been waiting for!

To Kalena, our daughter, for showing me how great it is to walk and to take a bus. I hope this work contributes to a healthier urban environment for your generation and beyond.

TABLE OF CONTENTS

LIST OF TABLES

TABLE OF FIGURES

CHAPTER 1 - INTRODUCTION

1.1 Background

Urban populations worldwide are soaring, necessitating an exploration of ways to make them more sustainable. In 1900, 14 per cent of the world's population lived in cities. Today half of the world's population does (Neuman, 2005). The predominant style of growth in North America during this time was urban sprawl. Urban sprawl resulted from many factors including the lure of inexpensive land, advances in transportation, the real estate developer, mass production housing, and the "American Dream" of the single family detached home (*ibid*). The environmental benefits however of less land consumption and a growing interest in addressing the economic and social impacts of sprawl have resulted in calls for more sensitive subdivision design. Sustainability has therefore emerged as a common focus in global and local discourses. Making existing cities and new urban development more ecologically based and livable is an urgent priority in the global push for sustainability.

New urbanism and greenways have made their mark in the effort towards environmental responsibility. New urbanism is widely acclaimed as a more environmentally sustainable form of development than conventional low-density development typical of sprawl. The past 40 years in Canada have presented many examples of greenway development in urban areas. During this time, the development of urban greenways has evolved from a strictly greenbelt approach to a more holistic ecosystem approach which includes a greater utilization of ecologically based planning, conservation of natural systems, incorporating the principles of sustainability and expansion of public participation (Taylor, *et al.,* 1995). Current planning activities present a definite opportunity to rethink and reshape the way land, along with many other resources, are used in the creation of places that sustain the planet and the human spirit.

As an academic discipline, and practice, planning can contribute greatly towards creating more sustainable communities (Beatley, 1995). The evolution of planning practices in both the natural and urban settings sets the foundation for building towards a more responsible form of urban development at nature's doorstep. Both new urbanism and greenways have made and continue to make promising contributions to more sustainable planning.

1.2 Urban Design in the 20th century

Until World War II, traditional neighbourhood design was the basis of European and North American settlement. Such development was characterized by mixed use and pedestrian friendly communities of diverse populations (Duany *et. al.,* 2000). In the 20th century North American cities began segregating land uses, regulating noxious industries and creating single purpose districts. Urban planning sought to enhance safety and efficiency by putting distance between activities deemed incompatible. Post-war governments began implementing urban renewal schemes with the aim of reviving downtown areas. As urban renewal efforts faced increasing opposition, a new type of development took hold. Suburban development outside of the city centre became the predominant pattern of growth in North America facilitating an escape from the urban problems of city life such as congestion and pollution. Rural to urban migration further increased the population living in cities (Neuman, 2005). As suburban growth continued to expand outwards from the centre of cities, it consumed an alarming rate of greenfield land.

Sprawl is characterized by unstable growth, vast consumption of land, social inequity, isolation, traffic congestion and reliance upon the automobile (Talen, 2001). Sprawl increasingly dominates development converting vast expanses of land into roads, parking lots, rooftops and driveways. The impermeability of these surfaces generates polluted runoff that

is a leading threat to water quality, downstream flooding and habitat loss (Berke *et. al.,* 2003*)*. According to Duany *et. al.* (2000) there are five components of sprawl. There are residential clusters, or pods, which are often advertised as a "village" by developers. These pods often have contrived names lending themselves to the romantic, while seemingly paying respect to the natural and historic features that have been displaced by the development. There are single storey shopping centres, separated from the street invariably by parking which lack any other type of use. When office parks are included in the suburban subdivision design they are comprised of solely places for work. Civic institutions such as churches and schools are large, infrequent, unadorned and surrounded by parking facilities. The car dominates the wide streets which are often curvilinear, with cul-de-sacs, collector roads and a weak pedestrian environment. Sprawl persists because of the line of relatively inexpensive open land, transportation advances, readily available capital to purchase property, real-estate preferences, mass production of homes and the pervasive dream of owning a single family detached home (Neuman, 2005). However sprawl is actually more expensive than compact development for both operational and capital costs. The greatest savings in compact development are in less land consumed and infrastructure built especially water, sewer and road servicing (*ibid)*.

Suburban life has many liabilities attributed to its design. These liabilities can be grouped into two main categories – lack of mobility and segregation (Talen, 2001). Suburban residents are forced to drive and the street configuration forces every car onto a collector road. The curvilinear streets, used in response to steep topography, were initially restricted to such because they limited connectivity and made the adjacent lots smaller and awkwardly shaped. The unrelenting curves within suburban neighbourhoods created a disorienting environment. Initially this was also seen as purposeful in discouraging cruising by unwelcome strangers. In essence the design of many suburban neighbourhoods is based on the assumption, at least in

part, that no one will walk. Land use is segregated by strict zoning bylaws. Even within residentially zoned areas which favour low density over compact communities, there is segregation of the housing by "market segment". For instance buyers can be grouped into subgroups perhaps by social demographic characteristics. Clustered residential development is then built to appeal to a particular subgroup. In turn, each market segment is touted as being exclusive. For instance only a few models of singly detached family homes will be made available to potential buyers. Developers introduced this design feature as a way to distinguish their mass-produced product. As much as 20 percent of a suburban developer's budget can be allotted to superficial variety in order to distinguish one "cookie cutter" home from another (Duany *et. al.*, 2000).

By the close of the 20th century, planners began to turn full circle, advocating mixing land uses for vibrancy and sustainability. Many cities in the 1980's and 1990's amended zoning bylaws to provide the opportunity to encourage and intensify mixed uses (usually a combination of residential, commercial, open space and institutional). Starting in the 1990's a concept called new urbanism began to dominate the planning discourse which was becoming infused with overtones of environmental responsibility (Grant, 2002). Its main ideas have come to dominate development in the twenty-first century under the headings of smart growth, sustainable development, new urbanism, and neo-traditional design. These movements are the components of what Talen (2005) calls urbanism. Such efforts are attempting to reconcile ideas about urbanism that have been evolving and competing for over a century. Some find it difficult to support a pre-determined definition of what urbanism is. There is, however, recognition that intervention is needed in order to create livable places that maintain integrity. Talen (2005: 3) defines urbanism as development which is multi-dimensional, inclusive, and accommodates all patterns and forms of human settlement. She

refers to it as "human settlement that is guided by the principles of diversity, community, connectivity, mix, equity and the importance of public space". Some might argue that her definition of urbanism is too broad and thereby vague. In any case, identifying the principle components that guide good urbanism is necessary. The opposite of urbanism is tendency towards separation, segregation, planning by monolithic elements (such as expressways), neglect of equity, place, the public realm, historical features and human scale. Talen suggests that urbanism and its opposite are not subjective, but actually distinguishable.

Under this definition, diversity and equity are dominant principles used to define urbanism. To be applied successfully these principles must be implemented in a variety of contexts. In this case social equity is mostly an issue of spatial equity and accessibility. When a development is socially equitable the physical qualities of life (goods, services, facilities and amenities) are within reach of everyone regardless of their social status or mobility constraints. The implementation of these principles is challenging. As compared to diversity, equity is much more of an ideal. However, there are conditions of development that can be said to either foster or hinder equity and diversity. For instance, equity implies the need to consider pedestrian orientation in addition to other transportation modes. It necessitates civic spaces and movement in from public transportation. It requires integration and permeability, things such as small, dispersed facilities. Where there is separation and inequity or obstacles to diversity and equity there is failed urbanism.

1.2.1 New Urbanism

New urbanism seeks to reconcile the weaknesses and liabilities of the predominating suburban concepts of development. The concept of new urbanism has its roots in the transit-oriented development (TOD) concepts of Calthorpe (Grant, 2002), the traditional neighbourhood

design (TND) of Andres, Duany, and Plater-Zyberk, and Nelessen's small communities (Bohl, 1999). TOD concentrates development in nodes associated with transit stations. It aims to create an urban regional structure with clusters of uses aligned in a density gradient from transit stations with low density residential development being dispersed toward the edges of the node within an S-minute walk. This model works particularly well for urban infill and redevelopment projects. The TND model with its emphasis on intensification and mixed compact uses at a fine grain, works best with greenfield development on new suburban sites. TND's main principles address two key problems endemic in the suburban form - the spatial separation of land uses and lack of mobility (Talen, 2001). The aim is to create a livable built environment that is vibrant, vital, accessible, close knit and esthetically appealing (Berke, 2002).

In terms of physical design there are some characteristic concepts incorporated into such development. Compared to low density sprawl, new urbanist developments require considerably less open space. Its high density development pattern (usually more than 12 dwelling units per acre) mixes different land uses including homes, shops, schools, offices and public open spaces. It also attempts to mix housing which may attract different income groups. The interconnected street network forms blocks lined with building fronts rather than parking lots. The streets are narrow and pedestrian friendly to encourage non-automobile modes of transportation, such as cycling and walking. Homes are punctuated by front porches and have short setbacks from the streets. There are many fewer garages and longer driveways to encourage street front for people, not their cars. The intent is to enhance civic interaction between public and private spaces. The design resembles Howard's 1898 vision of the garden city giving close attention to spatial relationship among land uses in order to create a close-knit social community (*ibid*). In fact the entire social doctrine of new urbanism is in terms of

creating a sense of community. With this aim there is the integration of residential space with carefully designed and placed public space. Social interaction is promoted by designing residences in such a way that residents are encouraged to get out of their houses and cars and into the public sphere. The implicit assumption is one of spatial determinism - the organizing power of space facilitates resident interaction and a sense of community (Talen, 1999).

Some suburban developments do consist of the essential elements of new urbanism right from the outset. Particularly over the past ten years there have been many development projects which incorporate elements of new urbanism. This number is still, however, a small fraction of the total number of residential developments in North America. It is recognized that development which aims to recreate the traditional neighbourhood is difficult to successfully implement. Often the original subdivision plan may impeccably follow new urbanist credentials however during the process of development the project becomes at best a "hybrid" of new urbanism principles and typical suburban development. Grant (2006) might describe the process as "cherry picking" the new urban features for implementation. Often it is the case that the urban ideals progressively deteriorate in implementation due to a failure in the "structure of influence" (Talen, 2005) where the "as built" reality devolves into something far off the intentioned mark much less than the intended goals. Often the goals are set aside under the weight of market success.

There are some typical obstacles to the implementation of new urbanism. In order for the transit operator to provide extensive and frequent service to the community it must meet an economic standard. Until such a time as this happens, residents most often must rely on private automobiles. With regard to public works and emergency services, alleys, narrow streets and boulevards can be difficult to maintain and maneuver, especially for snow clearing

operations, buses and fire trucks. This challenge, combined with requests to service high maintenance neotraditional items such as decorative street lights, leads at times to weak support for such development initiatives. Developers may have a limited interest in cutting edge planning innovations if their adoption means slower sales. While not opposed to the concepts of building of place and community, the developer's concern is more about achieving market success than meeting planning objectives. Developers prefer wide market appeal and therefore may be hesitant to accept the more innovative aspects of new urbanism. Depending on the flexibility of the design standards set out by the municipality, these obstacles may lead to a development which falls short of the new urbanist ideals.

Beyond these implementation type challenges there is considerable debate about whether the concept actually delivers on its promised intentions (Berke, 2002). There are indeed gaps in the new urbanist principles. There is a strong focus on creating a livable built environment for human residents only. None of the principles of new urbanism explicitly support the maintenance of essential life support functions of the ecosystem. The natural environment is to support urban livability rather than the life-support functions of the ecosystem. New urbanism subdivisions require less land, and impervious surfaces and are therefore touted as supportive of conservation goals such as water quality, protection, and flood mitigation (Berke *et. al.*, 2003). New urbanism itself does nothing to curb urban sprawl since most developments are still built in green spaces on the suburban fringe. Perhaps the transportation benefits have been oversold (Crane, 1996). Although land use and street configuration improve community accessibility, it is possible that the number of auto trips and vehicle distances traveled actually rise with this increase in accessibility. While it is likely that many elements of the design do discourage driving for some types of trips, the aggregate effect is unclear. Further research is needed to espouse the realized benefits of new urbanism.

1.3 Community Sustainability

Aiming towards the intended goals of new urbanism is movement towards greater levels of community sustainability. Such focus is at minimum movement in a positive direction for the profession of planning, the environment and the community. It can be said that sustainable communities have been widely accepted as a conceptual framework for local planning. An overarching goal in landscape and urban planning today is to create more sustainable communities. Such a community can be defined as (Beatley, 1995): "A place that seeks to minimize the extent of the urban "footprint" and strives to keep to a minimum the conversion of natural and open lands to urban and developed uses". How can one recognize a sustainable community? Is it even possible in the urban setting? Can the process of living, consuming and producing in cities even be sustainable? Creating a sustainable city may only be a "motivating metaphor" (Neuman, 2005, 23), none the less such motivation is in a positive and responsible direction.

While communities are adopting policies and development techniques that are consistent with sustainability, few successfully integrate all aspects. Infill development in established downtowns can be more supportive and complementary than edge city development, in that the focus is on reusing already committed lands prior to consuming or destroying greenfields. Despite the fact that infill development has great potential the reality is that the majority of developments occurring in North America today are at the edges of established cities. None the less community planning will do well to pay attention to the principles of creating community sustainability. New urbanism with its five main goals of greater density, mixed use, sense of community, pedestrian orientation and ecological sustainability makes movement towards sustainability. Although it may be said that its design concepts are being

developed in advance of evidence they actually support these goals (Brown and Cropper, 2001), new urbanism is a concept that is fervently being embraced because it intuitively seems to makes sense (Krizek, 2000).

1.3.1 Density

Increasing densities within development projects is accepted as more sustainable than lower density, sprawl type developments. Although the question of how dense is still largely unanswered, there is a most obvious benefit to higher densities and that is that they tend to confine negative impacts to sub basin areas rather than spreading it across the greater landscape. Shallow front yard setbacks, typical of greater density residential areas, can actually reduce the length of impervious driveways. High densities provide more room to locate storm water best management practices such as storm water detention ponds and infiltration systems in open spaces (Berke *et. al.*, 2003). However, as with all five concepts of sustainable communities, no one concept alone is the sole key to creating more sustainable communities. The marketplace itself may be the toughest obstacle to developing sustainable communities. Studies show that consumers are unwilling to relinquish single family homes on large lots to higher density urban forms (Carliner, 1999). In fact, survey and marketplace experience indicate that homebuyers will choose smaller lots as a last resort, preferring longer commute times, fewer amenities and even less floor space rather than higher densities (*ibid*). Social prejudices, aversion to infringements upon quality of life such as noise and traffic, and financial advantages to low-density exclusionary land use regulations are at the root of such preferences (*ibid*) as is a faulty assumption that the benefits afforded by low density neighbourhoods are absent in denser neighbourhoods (Neuman, 2005). In order for regulatory changes to allow for higher densities to be successful, consumers must choose to live in higher density housing. Suburbanites may be unwilling to accept such an option in today's marketplace. However by incorporating greenways and other greenspaces, higher density

may be more acceptable provided that other environmental, aesthetic and communal concerns are addressed. There may actually be little added value to having larger lots given the existence of and proximity to greenspace areas (Mohamed, 2006). This concept, although not yet fully accepted in the market place, in combination with the next four concepts of new urbanism and sustainability does indeed support the development of a more sustainable community.

1.3.2 Pedestrian Orientation

Encouraging pedestrianization is another step towards creating community sustainability. From the body of literature in the field of urban design it appears that the most likely factor to invite pedestrianization is improved links between the private space of buildings and public space of the street (Handy, 1996). Perhaps the most important contribution pedestrian orientation can make to creating sustainable communities, is to make it easier to engage in walking during the course of regular daily activities (Frank and Engelke, 2001). Walking as well as cycling are the most sustainable modes of transportation (*ibid*). Effort towards changing auto based travel may very well contribute significantly towards creating more sustainable communities.

Walking is identified as the adult physical activity most amenable to influence (Siegel *et. al.,* 1995). Individuals' motivations and limitations to walking are central to the decisions to walk. Urban form is a mediating factor which encourages or discourages walking when given the motivation to walk in the absence of limitations (Handy, 1996). In destination type walking if the individual perceives the distance to be too great to walk they will most likely take another mode of transportation or not make the trip at all. But it is not distance alone which is the nonmotivating factor but the perception of distance. Studies have shown that users will frequent a public space if they can walk to it within a 3-5 minute walk from their

home (Talen, 2006). Still, the role of urban form on the choice to walk is not straight forward. For instance does the presence of a sidewalk of a certain width mean that a stroller feels safe enough to walk and does so? Does the absence of a sidewalk mean the individual will not walk? Certain aspects of urban form may play an important role in encouraging destination type walking and perhaps a lesser role in non-destination type walking (strolls) (Handy, 1996). Empirical studies on urban form and travel behaviour have not yielded very consistent results with respect to commonly shared conceptual models and most studies focus on motorized transportation. Understanding the effects of urban form on non-motorized transportation remains difficult due to various methodological challenges which include reporting by proxy, memory lapses and underreporting of short trips (Frank and Engelke, 2001).

It is important to look at the big picture when seeking to alter auto dependency. There are many barriers to altering travel behaviour. Household travel is influenced by a myriad of factors including household composition, automobile availability, employment location and hours, transportation costs, weather, and shopping preferences. Many individual determinants of travel behaviour are firmly embedded in cultural and attitudinal approaches. Therefore it may not be reasonable to anticipate that a high car using family that moves from a traditional suburb to a new urbanist community is going to drastically alter its travel behaviour (Krizek, 2000). Differences in travel may be more a function of values and preferences residents possess rather than urban form. Certain neighbourhoods may simply attract individual who place a higher or lesser value on walking and cycling. Therefore self-selection may have a greater impact on travel than urban form. Furthermore, personal attitudes towards environmental issues such as transit and automotive mobility may also explain people's travel choices or travel may be more a function of costs (both time and money) and preferences

(attitudes toward alternative modes) than improvements in access (shortening trip distances by increasing density and mixing uses) and improving street connectivity (Frank and Engelke, 2001). It is important to note these potential barriers to behavioural change. It is also important to note that most of these factors are outside the control of planners. Although urban planners cannot directly alter many of these more psycho-socio-cultural factors, they can design and create communities that provide pedestrian opportunities. Creating pedestrian orientation within communities at least facilitate non auto choices for residents. Pedestrian orientation in combination with greater densities and the other sustainable community concepts contributes towards a greater level of sustainable community.

1.3.3 Mixed Use

Mixing land uses rather than separating them is said to be another step towards supporting community sustainability. Mixed use provides a framework whereby the possibility of creating a sense of community, sense of belonging and less auto dependency can be more greatly achieved. Neighbours meet as they walk to local amenities, their paths cross in a diversity of settings that mixed use helps to create within close proximity of one's dwelling. Diversity and equity are key factors in creating successful urbanism. When urban development is socially equitable goods, services, facilities and amenities are within reach of everyone regardless of their social status or mobility restraints (Talen, 2005). The greatest contribution that mixed use makes to creating a more sustainable community lies within this concept's focus of integration as opposed to separation.

The exact level of mixed use that is necessary or acceptable is not clear. Empirical research shows that there is a correlation between mixed use, land use and non auto travel (Talen, 2006). However unless amenities and job centres are linked by transit there is often still the need to commute long distances by car. Mixing uses lends itself to creating diversity in a

community by mixing the type of housing stock available and the amenities accessible (especially without a car). Such mix appeals to a diversity of people in different stages and walks of life. There are two schools of thought about mixing different individuals in close proximity (Brown and Cropper, 2001). One school believes that proximity will enhance social contact when neighbours are similar. In light of the density and diversity goals of new urbanism such development may never succeed at inclusivity because of the degree of difference between residents living next door to each other. The second school of thought adheres to the idea that repeated contact, especially under good conditions, is associated with positive attitudes towards heterogeneous groups. Neighbourhood association efforts tend to support this school of thought. Few studies have actually tested if residents of new urban developments do indeed have a stronger sense of community. Regardless, the emphasis of mixed use is on integration as opposed to separation. This focus provides some significant potential in the movement towards creating sustainable communities in conjunction with the other concepts of sustainable communities.

1.3.4 Socially Inclusive Neighbourhoods

A fourth principle of community sustainability is with respect to social inclusion. There is a need to contemplate and act upon what is good for people rather than what is good for business. A sustainable community is one in which diversity is tolerated and encouraged, where sharp spatial separation or isolation of income and racial or ethnic group does not exist and where residents have similar access to both basic and essential services and facilities. In developing more sustainable communities several factors must be considered including physical form and social considerations which may not necessarily need to be institutions as Beatley (1995: 386) describes. The most important social considerations may be the creation of a "livable place" and a sense of place. A sustainable community fosters a built environment that engenders a special feeling of attachment and belonging (Talen, 2006). In

turn, the physical characteristics of a community help to create a sense of community. It is important, however, that a sustainable community nurtures a sense of place by understanding and respecting its bioregional context (which include its topography and natural features such as creeks, rivers, flora and fauna). A major characteristic of a sustainable community is the marriage between social and environmental concerns (Beatley, 1995).

Over the last 30 years a growing number of studies have tried to determine the extent to which physical environments affect, or have the potential to affect, individual behaviours (Lund, 2003). Such research has been conducted in the fields of environmental psychology and urban planning and design. This literature notes the impact that urban planning has had on the quality of life in neighbourhoods and cities especially after WWII. The elimination of both neighbourhood scale elements (land use diversity, population diversity and usable public spaces) as well as smaller scale elements, (such as removal of porches from housing design) is thought to have contributed to the loss of "street life". The loss of street activity resulted in a loss of cohesiveness and perceived safety in neighbourhoods and the privatization and isolation of life in automobile dependent subdivisions. The question at hand currently is whether changing the way planners design neighbourhoods, particularly their public spaces, can help revive the strong community life observed in the early 20th Century neighbourhoods. Typical development patterns create subdivision developments and not necessarily communities. The development and consumption patterns of development have been based on the celebration of individualism (Beatley, 1995). Abandoning a sense of individualism may not be necessary but what is required is establishing a balance between individual desires and community needs (*ibid*) as well as the needs of the natural environment.

New urbanism is in part a response to a sense of loss of community. There is debate about the extent to which urban form affects the quality of social life (Brain, 2005). Studies show that perhaps other factors have a greater impact on neighbouring; factors such as personal attributes (i.e. gender, presence of children in the home), and physical features such as climate and topography (Nasar, 2003). What is most defensible is that new urbanism design concepts when implemented increase social interaction and that this interaction in turn creates at least weak social ties. Moving much beyond this implies assumptions about the quality of interaction involved in the public and private space. This interaction, then, takes on a deeper level of effect which is without basis in the literature (*ibid*). It may be prudent for planners to say that they are simply "meeting the human requirements of physical design, rather than actively creating certain behaviours" (*ibid*, 1374). Social inclusion is an important part of creating community sustainability. It is the vitality that it aspires to that is most promising in the movement towards community sustainability.

1.3.5 Ecological Sustainability

Building sustainable communities with ecological sustainability in mind is addressing the question of how to create development that supports the environment. It is development that considers its plans as part of the environment and not separate from it. A different physical form (not the predominant sprawl-type development) needs to accompany the vision of community sustainability. Therefore, higher densities, compact forms, an improved transit system with less reliance on the automobile and greater opportunities for walking and cycling need to be made an option. Ecological sustainability begs that development must not occur on a project by project basis but rather within a landscape framework which includes conservation of natural processes and habitats (Kaplan *et. al.*, 2004). There is an important connection between land conservation and land use. Green infrastructure plays an important role in conserving lands under development. As with other infrastructure, green infrastructure

needs to be planned, designed and protected prior to development (Walmsley, 2006). Addressing greenways as green infrastructure can be an important emphasis in language. In some cases of greenway development preserving greenspace is considered "nice to have" but the emphasis on green infrastructure speaks to the "need to have". Green infrastructure differs from the "nice to have" greenspaces in three main ways (*ibid*, 2006). The protected lands serve an ecological function versus recreational, they include ecologically important landscapes and can shape the framework of growth. Discrete, isolated, conserved greenspaces will not add up to much in the way of sustainability. In reaching towards greater levels of ecological sustainability landscapes under development need to be afforded the same or greater attention in the planning process as do all other types of infrastructure.

There is emerging consensus that three design features are key to examining the impacts of new urban design features on ecological sustainability – low versus high density, auto versus pedestrianization, and mix versus single use (Berke *et. al*., 2003). With so many new urbanist developments occur at the fringe of established communities one cannot bypass the fact these developments may simply be the face of "new suburbanism" characterized by a loss of greenspace and a degradation of watersheds which may have otherwise been left unaltered had they not been developed. New urbanism is criticized for its secondary concern for natural features. However the literature indicates that this design movement is positively contributing to ecological sustainability, even at the edge of established communities. New urbanist subdivisions, even those at the urban fringe are more likely to make an effort to protect and restore sensitive areas, reduce impervious cover and incorporate best management practices (Berke *et. al.*, 2003).

New urbanist developers are perhaps more mindful that development must be shaped to the natural contours of each site (Walmsley, 2006). In an American survey of five states (Georgia, Maryland, North Carolina, South Carolina and Virginia) new urban developments, as compared to conventional subdivisions, were found to be at least twice as likely to protect steep slopes, natural drainage depressions and protect buffers. This is impressive as the average gross densities in the studies that made this finding were 2.5 times higher than conventional developments in greenfields. As well new urbanist subdivisions are more likely to restore degraded streams, include best management practices, mitigate runoff impacts, and reduce and modify impervious surfaces (Berke *et. al*., 2003). There is more opportunity to protect hydrologically sensitive areas such as steep slopes, porous soils, forested sites and wetlands while reducing the size of individual lots and the length of streets. The biggest limitation to new urbanism's contribution to fostering sustainable community may be factors beyond planners' control such as urban design codes that may not take full advantage of the opportunity to protect sensitive areas or the absence of employment opportunities or inadequate provisions for transit. Although new urbanism has been criticized for its secondary concern for natural features, its goals in turn do support building more ecologically sustainable communities.

1.4 Greenways

When development occurs at the urban edge of a community it very often infringes upon existing greenspaces. Such greenfield development provides a rich opportunity to conserve the affected greenspaces while at the same time develop a multifunctional amenity for the community. Many greenway projects have been incorporated into new urban subdivisions especially at the urban fringe. They are a byproduct of the effort towards ecological sustainability. Greenways have played an increasingly important role for all parties involved

in urban development. This next section describes the evolution of greenways and describes the changing face and goals of this design feature.

1.4.1 Evolution of the Term

The general idea of a greenway is that of a protected linear corridor which improves environmental quality and provides for outdoor recreation (Little, 1990). In fact because the term greenways has been used as a generic term and inconsistently applied to planning practice, the process of communication and knowledge sharing has been hampered (Ahern, 1995). Due to this relative history of the term greenway, subsequent literature about greenways is very limited and there is a need to increase the scholarly inquiry into greenways and the creation of the associated body of literature (Fabos and Ryan, 2004). Despite this complication, the evolution of greenways can still be charted and the terminology deciphered.

1.4.2 First Generation

Frederick Law Olmstead is considered as the father of the greenway movement in North America (Little, 1990) (Fabos, 2004). The greenway movement evolved through three generations (Searns, 1995). The first generation extended from prior to the 1700's to circa 1960. It is worthwhile noting that early greenways were designed for pedestrians, carriages and horseback riders. In 1902 the motor vehicle hit mass production. Demand for auto access to recreational areas increased. As highway design requirements changed to accommodate increased vehicular speeds and volume, landscape characteristics became secondary features in the design of highways. Thus, the parkway began to obliterate the natural scenes they originally were designed to make available.

By comparison the concept of the greenway in Western Europe evolved with a different focus. In the United States, the greenbelt was a relatively smooth, wide swath of green land for

transportation, whereas in Britain, where this concept originated, its particular function was to separate communities. Lewis Mumford in *The City in History* describes what British Economist Alfred Marshall outlined (Little, 1990: 15):

> We need to prevent one town from growing into another…or into a neighbouring village; we need to keep intermediate stretches of country in dairy farms…as well as public pleasure grounds.

This sentiment is similar to that expressed by Ebenezer Howard, a British social reformer. Howard in the 1902 edition of *Garden Cities of To-Morrow* proposed an agricultural country belt around the garden city to maintain its urban integrity by maintaining rural integrity. Raymond Unwin, an architect and planner later called such protective features "green belts" (*ibid*, 1990).

Greenbelts continued to evolve in North America. By 1900 there were a number of cities considered "Garden Cities". The North American version of the garden city was more concerned with creating a city of gardens as compared to the British version of creating a two dimensional horizontal wall of green which would serve much like a barrier while heightening the sense of internal unity and keeping urban settlements from coalescing. Beyond the concept of the garden city, the principle of establishing permanent greenbelts around urban communities was a major contribution (*ibid*). Benton MacKaye's ideas further added to the country belt idea proposed by Ebenezer Howard. MacKaye prefigured the modern trail-based greenway system. MacKaye's design was to curb what we call today urban sprawl by creating "a common public ground" (Little, 1990: 18). MacKaye saw these openways not only as devices to guide development while encouraging decentralized economic growth, but also as natural corridors which would provide recreational opportunities to large metropolitan populations.

1.4.3 Second Generation

The second generation of greenways started circa 1960 and continued until circa 1985 (Searns, 1995). Over the years there were many individuals who contributed significantly to the evolution of the modern concept of the greenway. Designing to include greenspaces may very well have been best espoused by Ian McHarg, whose notion of "physiographic determinism" is now a central concept in regional planning. McHarg's method was to establish priorities for development and areas of no development based on natural processes. Wetlands pose as a good example. Such areas provide value which represent the economy of nature and are no less important than the value that represents the economics of money in determining where a facility, street or subdivision should be located. In *Design with Nature*, McHarg (1969) provides a detailed procedure on how to prepare a design plan with protection for certain features in mind (Little, 1990). The inception of the hike-bike path fully defined the character of the second generation. These greenways were trail-oriented, automobile-free corridors. Although trails are a direct ancestor of greenways, they are not without their critics. These mainly adjacent landowners sometimes perceive trails and greenways as a threat to either security or privacy (Ryan, 1993). Beyond this type of perceived intrusion, trails and their anthropocentric use can also cause degradation to the natural corridors in the heart of the urban environment (Searns, 1995). This concern for environmental protection lead the greenway movement into the third generation.

1.4.4 Third Generation

The third generation (circa 1985 to present) is characterized by the multi-objective greenway (*ibid*). This generation is unlike the previous two generations, which were primarily amenity oriented. This third generation of greenways also serves a mitigating function and thereby offers a much broader purpose. In the 1980's urban development within environmentally

significant areas began to be more fully realized. Greenways thereby began to be designed to mitigate anthropogenic impacts. This establishes the role of greenways as more than just an amenity for beautification and recreation, but also as a key component in sustainable development planning. As a diversity of lands are more frequently being combined in greenway planning and land-use regulation, the most common lands incorporated into early greenway planning efforts included wetlands, floodplains and steep slopes. Currently, however, agricultural lands, aquifer recharge areas and biotic communities are also being included.

Building on Searn's (1995) description of the term's evolution, Fabos and Ryan (2004) further divide greenway history into two additional generations. They describe the fourth generation as being the naming of greenways. In particular he credits the use of the term "greenways" in a prominent report the US President's *Commission on American Outdoors Report* (1987), as endorsement of the term. This report refers to greenways as a "living network of greenways", which he denotes as an endorsement of greenways in the protection of river edges and water quality. The second and final important defining aspect of the fourth generation is the publication of *Greenways for America* by Little (1990). Fabos cites this book as the basis for widespread adoption of greenways. The fifth generation he describes is characterized by the more extensive use of greenways in Europe. Tracking the international use of the concept of greenways is hindered by two factors: the use of a variety of terms and the fact that individuals from a variety of disciplines (from wildlife biology, landscape ecology, planning and design) are active in creating and maintaining greenways. Due to a lack of interaction between these fields and the use of a common term, worldwide it is difficult to describe this generation in great detail. Fostering interaction among the diverse disciplines may help to reinforce the use of the term "greenway". It is relatively premature to decipher clearly the

spread of greenways internationally. The term "greenway" does however communicate an idea that is being understood internationally (Fabos, 1995). Perhaps in time with greater interaction among the disciplines and comprehensive greenway study, the use of the term greenway will become more widespread and tracking its representative use worldwide will be more possible.

1.4.5 Some challenges to Greenway Implementation

The challenges in implementing greenways arise in two primary areas: biophysical and human (Kearney and Bradley, 1998). Many biophysical factors must be considered when planning and managing greenways in the face of urbanization. While methods to assess and improve biophysical dimensions of environmental quality are readily available and environmental managers frequently collect such data, this is not the case for equally important human dimension factors (Gobster and Westphal, 2004). Human factors include values, perceptions, uses, attitudes and behaviour. Ecosystem management recognizes that humans are a part of nature and that humans including their particular perceptions, beliefs, attitudes and behaviours may influence ecosystems and ecosystem management. The real challenge for managers is to manage the human factors while being focused on the goal of maintaining ecological integrity.

Once subdivisions are approved and greenways are planned and implemented there can be several common concerns raised by residents. Both greenway builders and adjacent residents face the challenging task of implementing and accepting the planned design. NIMBY opposition by adjacent residents is common, especially when a trail is installed in a greenway after a subdivision has already been established. Resistance from a few individuals can lead to bureaucratic inactivity and stall or halt a project. Both the proposed trail design and

management may be criticized. The proximity of homes to the corridor can foster anxiety about the trail's effect on the quality of life experienced by adjacent residents (Ryan, 1993). In anticipation of this, timing the communication of the plans for a trail within a residential natural area is critical. It is important to communicate with adjacent landowners from the outset (when they are still a potential buyer) about such plans and to provide an opportunity for these individuals to express their concerns. The overriding concerns most often expressed by potential trail neighbours are fears of increased crime, decreased property values and liability. Other concerns often voiced relate to a fear of careless maintenance, trespassing and loss of privacy (*ibid*). Implementing a trail within a greenway *prior* to subdivision development helps to minimize such back lash for potential buyers so they can make a more informed decision when making their purchase.

Other challenges include significant slopes and grades. Sometimes the lands dedicated for greenway purposes are inappropriate for residential development and therefore are dedicated as greenspace to the municipality. Such terrain is difficult to build and to traverse. The grade affects the type of surfacing which can be used and often techniques such as switch-backs must be incorporated to facilitate access. Additionally, users sometimes trail blaze, meaning they create secondary trails. Trail blazing can have significant negative impact on a natural area, creating edge effects in forests and reducing their intact interior habitat. Trail blazing, dumping, encroachment, culling and hunting rapidly degrade the features the greenways were in part established to help protect. Over the long term this can be a most significant challenge of greenway management.

The challenge for future greenway planners (Taylor *et. al.*, 1995) will be to determine the appropriate form, function, and conceptual organization with emphasis on connectivity and

protection of natural systems and cultural features. A significant challenge will be to apply the principles of sustainability that maintain biodiversity, system function, and accommodation of appropriate levels of human use all while harnessing public support through education and formulating implementation and management strategies that are efficient and affordable. In land-use planning it is recognized that planners must consider the environment and place priority on accommodating these needs. Greenways cannot be viewed as a panacea, as by themselves they do not make a significant enough contribution to sustainability particularly at the subdivision level. There are many other subdivision design considerations that must be planned and implemented in order to make progress towards sustainability.

1.5 Thesis Focus

This chapter has discussed primarily two concepts. It has explored new urbanism and greenways. Both concepts can play a role in achieving greater levels of community sustainability. New urbanism harnesses the transformative potential of physical design (Berke, 2002). Planning truly is the local link to community sustainability. It thinks globally and acts locally with the potential to reform the predominant, self-serving, unsustainable behaviours which predominate in the North American culture. Urban form in the 20th century emphasized auto dependence, separation of uses and vast consumption of lands through sprawl development patterns. These patterns of development have brought with them many unfavourable realities with regards to community sustainability. New urbanism in turn is a response to these liabilities. Its main goals aim for greater levels of community sustainability whereby the extent of the urban footprint in minimized. Combining the benefits of higher densities, pedestrian orientation, mixing uses, social inclusion, and ecological sustainability make movement toward the goal of creating community sustainability. Still most

development in North America is occurring in greenfields situated at the edge of developed communities. Such development has paralleled the inclusion of greenways in the emerging urban form. Greenways have evolved from solely an amenity feature to providing an important function in the goal of maintaining ecological integrity. New urbanism, community sustainability and greenways highlight the prevailing topics of research interest of this thesis. Given this, this thesis will explore these topics further. More specifically it will explore residents' experience of new urban design features and greenways in the context of new subdivisions in Waterloo, Ontario and the greater Kitchener-Waterloo area. This research will seek to expand current understanding of how a variety of new urban design features and greenways may contribute to community sustainability.

Chapter 2 will illustrate the research setting – West Side Waterloo. It will explore the antecedents to the current development, examining how the emergence of ecosystem based watershed planning played a formative role in the resultant urban form. The characteristics of the existing subdivisions will also be described, providing the reader an orientation to the community. The concepts of new urbanism, community sustainability and greenways with respect to the West Side of Waterloo and the research questions will be introduced. Chapter 3 describes the research method utilized to conduct this research. It describes a multi-method approach consisting of fieldwork (observation and unstructured interviews) and surveys of West Side residents and of the K-W area. Chapter 4 will examine the findings of this research. Both text and table will be used to highlight several patterns, anomalies and curiosities evident in the data. Photos accompany the data serving to illustrate some of the normative patterns of residents observed through unobtrusive observation. Chapter 5 illuminates the findings of the interviews conducted of twenty West Side residents. It provides a complement to the previous chapter by providing understanding into the

perceptions or the subjective "logic" by which residents operate. Finally Chapter 6 discusses these findings and the policy implications and recommendations of this thesis.

CHAPTER 2 – WEST SIDE STORY

2.1 Introduction

Urban development typically expands outward from a central core. Suburban development patterns have brought some relief of the perceived pressures of urban life and at the same time created other concerns and opportunities. In Waterloo, Ontario suburban development has followed this trend. As subdivisions expanded to the western edge of Waterloo, greenways, new urbanism and community sustainability made their mark. Waterloo is a community of approximately 111,000 residents who rely very much on groundwater for their water supply. It is this reality coupled with a motivated and resourceful community and planners which created a story most worthy of telling. It is a story which unfolds over four decades starting in the last half of the twentieth century to today. This is a story marked by intention and vision of developing lands while protecting the ecological integrity of the watershed. It provides a practical example of planning theory and practice in evolution.

2.2 Antecedents to the West Side Developments

The West Side story[1] begins in Waterloo in the 1960's with the Beechwood subdivision developments (Figure 1) that significantly influenced the way in which the West Side was later developed at the turn of the century. In particular, the emphasis on incorporating greenways into residential planning in Waterloo began with these subdivisions. These subdivisions built between the 1960's and 1980's are located on the lands bounded on the east by Westmount Avenue and the University Avenue Extension, on the west by Fischer-Hallman Road and on the north by Columbia Street. The Beechwood subdivision plans are characterized by a flexible land use pattern. The developments were complete in themselves, consisting of small land holdings, with separation between vehicular and pedestrian traffic.

[1] This chapter is largely an amalgamation of the information contained in a report on the Beechwood subdivisions by Larry Martin 2001, subdivision approval reports for City of Waterloo Council and the author's own experience with the Corporation of the City of Waterloo.

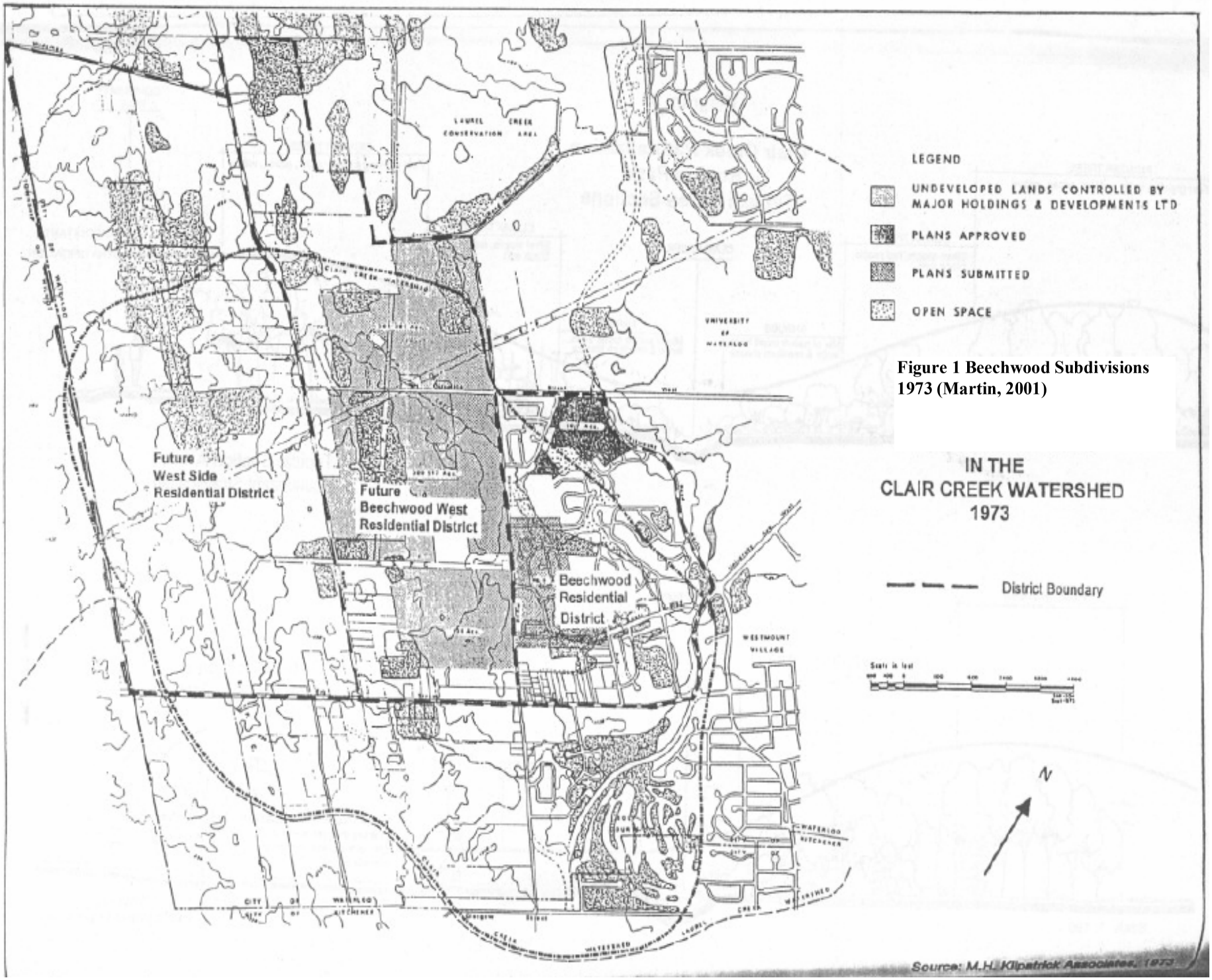


Figure 1 Beechwood Subdivisions 1973 (Martin, 2001)

Ultimately the conceptual form that evolved consisted of residential neighbourhoods consisting of four residential sectors connected to the arterial roads. Convenient access to the arterial road system exists while discouraging non-local traffic onto residential roads. Each residential sector was connected to each other by pedestrian ways that aimed at preserving the human scale of the development and linking the focal points of the community together (Martin, 2001: 9). Phase 1 of development, called the Beechwood Residential District, began in 1963 and was complete in 1977. Phase 2 of development, Beechwood West Residential District, began in 1978 and extended to 1993 with the completion of the Laurelwood subdivision. Over the four decades of development significant changes in the planning and implementation of the subdivisions evolved. The entire development took place within the Clair Creek Subwatershed, with natural features being retained as far as possible in terms of the technology and knowledge of the time. The implementation of greenways played a key role.

2.2.1 Evolution of the Beechwood Concept

The way in which the implementation of greenways evolved in Waterloo, parallels the evolution of the concept in North America. Initially greenways were planned with the goal of providing for pedestrian walkways linking focal points within a neighbourhood, to physically separate neighbourhoods (with the anticipation that this would foster neighbourliness *within* the neighbourhood) and to provide an aesthetic amenity associated with open greenspaces. These latter two objectives were linked to the desire by some builders and developers to enhance property values (Martin, 2001,). These objectives are mostly human-centred benefits. In more recent planning initiatives, a diversity of lands are more frequently being combined in greenway planning with the particular intention of also supporting ecological processes and functions.

In the 1960's - the early phases of the Beechwood subdivision developments - local street patterns were primarily "loops and lollipops" (circles and cul-de-sacs) and stormwater management practices were confined to concrete channels (Martin, 2001). With the planners' emphasis on greenspace dedication, primarily for the purposes of greenway development, some conflict over mandated greenspace dedication arose especially during times of weak housing markets. Other issues and concerns were raised over the years regarding the form and function of these greenspaces. For instance, might the greenspaces be able to accommodate active versus passive uses, single versus multiple uses, or low level maintenance versus naturescaping? How could physical design ensure public safety and local versus community use? Might it be possible to decrease vandalism and encroachments within the greenspace areas? Could home association ownership help keep maintenance costs low and help meet human needs while ensuring ecological integrity? Greenspace areas also planted a seed of insecurity for neighbouring residents – might these lands some day be developed? New resource management questions were being asked by everyone involved, especially as the focus on the goals of greenways began to shift.

The primary function of the Beechwood greenway system shifted over the years as each district was implemented. The initial goals of meeting only human needs shifted to attempting to seek more of a balance between meeting human needs and the needs of nature (such as providing dispersal corridors for wildlife) (*ibid*). Also as the years passed and the development of the Beechwood Subdivision continued, city planners began to question the approach taken in these subdivisions. Some unexpected outcomes were realized and some goals fell short of making their mark. The neighbourliness that planners and designers thought the greenways would encourage may have actually succeeded to a fault. Some residents when surveyed by Martin (2001) noted that they were acquainted with their

neighbours throughout their immediate residential area but that the greenway acted as a barrier to getting to know neighbours on the other side of the greenspace. The greenway system has had a varied and limited impact on the daily lives of residents. For instance, Martin found most residents did not have direct access to these greenways and most of their daily lives were spent arranging time for activities that occur outside of the neighbourhood. In order to reach the locations for these activities the residents are significantly car dependent. In particular the planners began to question the value of the greenways with respect to their use by pedestrians. The greenway approach did not appear to have helped children get to school, particularly in the winter months. Poor sightlines raised issues of personal safety, and since children did not walk to school, the sector approach was a definite disadvantage to transit planning especially in the 1980's as public transit was treated as an afterthought in the subdivision design. Greenways in these subdivisions have had limited success in reducing the negative environmental impacts of suburban life, such as auto emissions and pesticide use from lawn and garden care. Therefore, in the Beechwood example it may be said that greenways contributed in a very limited way to environmental conservation and social interaction.

As somewhat of an aside, it is important to note that greenways were not the only significant introduction in Beechwood. In addition to greenways, the Beechwood concept also incorporated homes associations. These associations are intended to manage common use areas such as recreation centres, provide services such as swimming and tennis instructions, host community events and regulate residents' actions through legal covenants signed at the time of home purchase. To some degree neighbourhood associations can be viewed as quasi-local governments. Each neighbourhood association elects a Board of Directors and the board has the authority to deal with violations of the covenants by residents and to lobby local

municipal council on behalf of the homes association membership. Over the years, the board members (which include local homes association members) have expressed reluctance on the part of its membership to renewing their covenants, which in many cases expire in either 10 or 25 year intervals. Reasons include dissatisfaction with the association related to yearly costs of membership among other factors.

When the Beechwood subdivision began in the 1960's the Clair Creek watershed was predominantly under rural use. Westmount Road marked the western edge of urban development. Non-farm residences were thinly scattered along the rural roads of the watershed. Creek stream flow and water quality had been greatly compromised due to the agricultural pressures along the margins of wetlands, lumber harvesting, cattle grazing and stream bank slumping. Despite this, the creek still supported a cold water fishery (*ibid*). Standard municipal engineering practices at the time were to control streams by channelizing and encasing them in concrete, pipes or boulder-filled gabion baskets, particularly in city centres. In more residential areas, stream improvements consisted of streams that were both channelized and hardened or left in a modified natural state depending on the local conditions. This began to change with the emergence of ecosystem based watershed planning.

2.2.2 Emergence of Ecosystem Based Watershed Planning

In the mid to late 1970's Beechwood residents expressed concern regarding future plans of development in the Clair Creek Watershed. In response to this concern city council requested a report on the hydrogeology of the north branch of Clair Creek. Based on the findings the consultant, Dillon Consulting Engineers and Planners was asked to recommend methods of ensuring an acceptable level of water quantity and quality. It was anticipated that knowledge gained from this report would be applied to city policy for the urbanization of waterways elsewhere in the city. The findings of the report presented a very disturbing picture of the

watershed if development continued without safeguards. The leading recommendation of the report was the development of a stormwater management policy. This policy had significant impact on the Beechwood greenway system as it broadened the greenway planning objectives to include serving the purpose of controlling and collecting storm water. The report did not however, instigate a fundamental change in municipal practice. More significant environmental planning occurred in the 1980's and ecological sensitive planning in the 1990's where significant policy changes would make their mark.

The mid to late 1980's and early 1990's was a time of significant evolution in environmental thought and practice in Waterloo. At this time the Beechwood developers, Major Holdings, were actively engaged in the planning processes for Phase Two of their developments. Further development was sought before city council at a time when traditional approaches to planning were being challenged at high levels within the City of Waterloo. In 1989 the city adopted an "Environment First" policy. This policy requires staff to consider the environment at every stage of programming. The Environment First policy reflects a pivotal shift from the tradition of focusing on the greenway for human needs to greenways for the benefit of the natural environment. The focus on greenways in Beechwood experienced a significant shift, as staff at every level began to reflect upon their respective areas of programming and how environmental needs might be better served. This meant, for example, that a plant health care program would now focus on minimizing maintenance, especially along creek corridors, reducing grass cutting and the beginning of the implementation of stormwater management ponds.

In 1985 the Region of Waterloo began a public review process of the Regional Official Policies Plan (ROPP). This plan focused on policies concerning the future economic, social

and land use changes within the region to 2011. Included in the reformulation was an evaluation of the land supply available for development. At the time the review concluded that there was sufficient land designated for urban purposes in the City of Waterloo to satisfy development needs into the late 1990's. Jointly the City and Region of Waterloo undertook a public planning study to identify how best to accommodate projected growth requirements to 2011. In this study the options considered included doing nothing, as well as an east side area expansion and a west side area expansion. The west side expansion option was deemed the most appropriate. This option included allocating 720 hectares for residential use, 175 hectares for industrial use, 117 hectares for landfill and hydro utility purposes and 700 hectares of environmentally sensitive lands. In 1992 the Ontario Municipal Board (OMB) approved an application by the City of Waterloo to designate the West Side lands as urban lands in the ROPP. This decision paved the way for urban development on the West Side of Waterloo, just west of the Beechwood subdivisions. The great concern over flooding and watershed degradation had not subsided however. There was great opposition to development proposals without additional watershed protection in place. At this time, in the early 1990's, a wide scale environmental movement was occurring. It was the beginning of significant transformation in land development in Waterloo. This transformation was due to the emergence of ecosystem based watershed planning.

2.2.2.1 Laurel Creek Watershed Study (LCWS)

Laurel Creek Watershed (Figure 2) covers 74 square kilometers in the Regional Municipality of Waterloo. The watershed is of special significance to the City of Waterloo with 80 percent of the Watershed being within the City. Tributary streams include Forwell Creek, Clair Creek, Beaver Creek, Cedar Creek, Maple Hill Creek and Monastery Creek. The Laurel Creek watershed is primarily an urbanized watershed but it does contain a mix of land uses and environmental conditions. Land uses include urban, agriculture, woodlands and wetlands.

Additionally, the watercourses contain a mix of conditions: concrete channels, natural streams within wooded areas, and constructed reservoirs (City of Waterloo, 2004). The fan shaped Clair Creek watershed is a major tributary of Laurel Creek on the West Side of Waterloo. It enters Laurel Creek upstream of the Grand River, several kilometres to the east. The north and south branches of Clair Creek consist of approximately five kilometres of perennial stream flow and drain a total of fifteen square kilometres of land. This part of Waterloo is also characterized by the presence of the Waterloo moraine. The topography is moderately rolling with knob and kettle features due to its glacial origins. Pervious sands and silts are

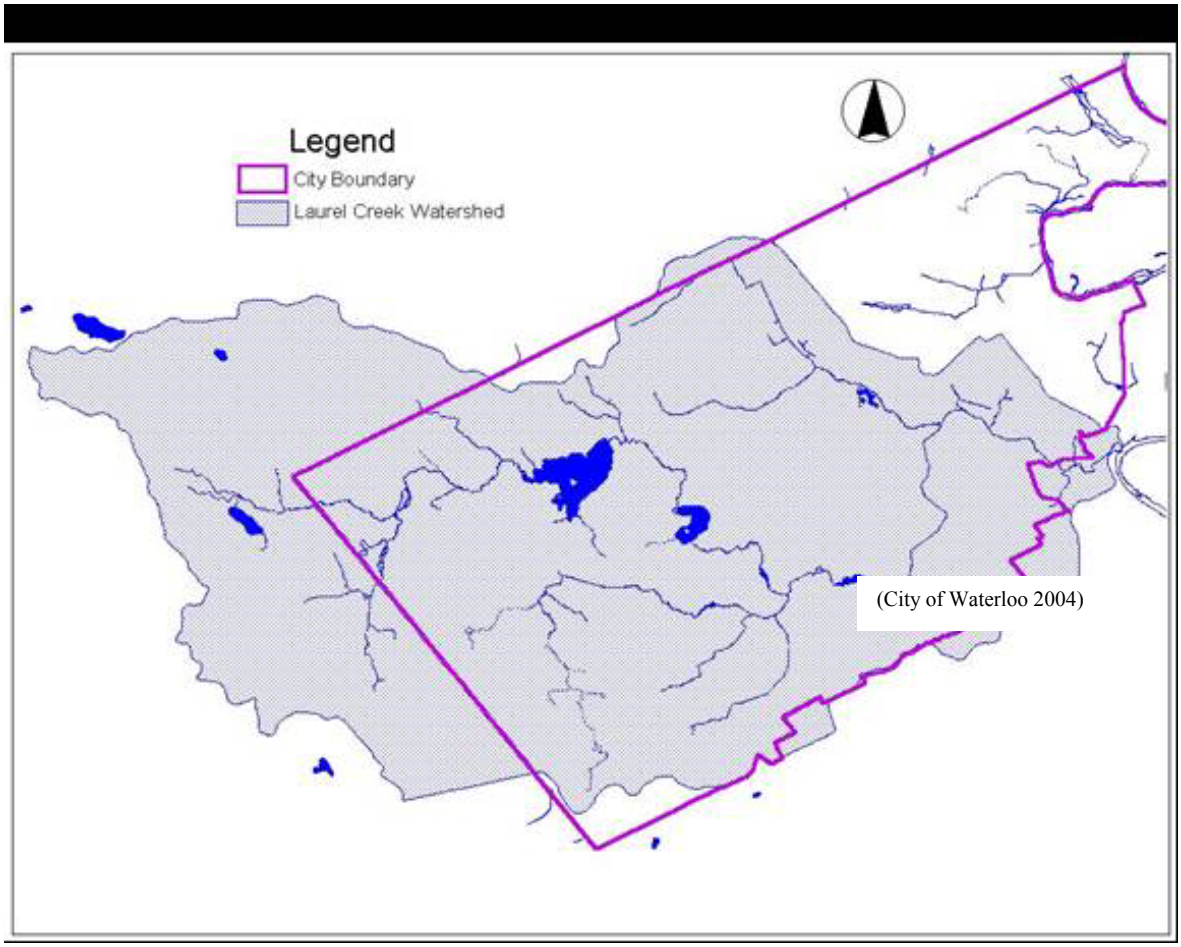


Figure 2 Laurel Creek Watershed

interspersed with largely impervious silty clay till throughout the basin area. Alluvial soils are

also found here. Wetlands are found adjacent to the creek's floodplains and are areas of a permanently higher water table which provides storage for stream base flow (Martin, 2001).

The Waterloo West Side story illustrates the unfolding of a framework for ecological planning and restoration. The Laurel Creek watershed became the central component of an initiative to introduce an ecosystem approach to planning. The community's involvement in addressing watershed concerns became more formalized in January 1990 when the Laurel Creek Citizen's Committee was formed. Its purpose was to protect, rehabilitate, and enhance Laurel Creek and its tributaries, raise public awareness and work as an advisory board to City Council. The committee continues today in a similar capacity. Based on recommendations from this committee, City of Waterloo Council along with the Ministry of Natural Resources, the Region of Waterloo, and the Grand River Conservation Authority decided an holistic approach to planning was required. This lead to the Laurel Creek Watershed Study which was undertaken at a cost of $750 000. It was understood that the opportunities and constraints to development identified in the LCWS would become the basis for the formulation of land-use policies to be established in the City of Waterloo's Official Plan. This was an effort to address the concerns about uncontrolled development within the watershed.

The goals and objectives for the watershed in the LCWS were (Motkaluk, 1997: 9):

- To minimize the threat to life and the destruction of property and natural resources from flooding, and preserve (or re-establish) natural flood plain hydraulic function.
- To restore, protect and enhance water quality and associated aquatic resources and water supplies
- To conserve, protect and restore the natural resources of the Laurel Creek Watershed (land, water, forest, and wildlife)
- To restore, protect, develop, and enhance the ecological, historic, cultural, recreational, and visual amenities of rural and urban areas within the watershed and particularly along stream corridors.

- To protect, restore, and enhance groundwater quantity and quality for water supply purposes.

Initiated in 1991, the final report of the Laurel Creek Watershed Study was completed in January 1993, providing a strategy for the future management of the watershed. In 1994, the City of Waterloo's Official Plan was revised to reflect the Laurel Creek Watershed Study's goals of protecting, managing and enhancing natural resources, including land, surface water and groundwater quantity and quality as well as forests and wildlife.

A significant recommendation coming from the LCWS is the requirement to undertake sub-watershed plans as a prerequisite prior to any further development on the West Side of Waterloo. The intent of such planning is to utilize an ecosystem based approach to planning and land development with the integration of biological and physical characteristics of an area into a comprehensive plan (Motkaluk, 1997: A-1). The most significant impact on land use planning on the West Side came as a direct result of LCWS's recommendations. The study imposed constraints on all lands within the City of Waterloo while intending to identify the kinds of development and land use activities to occur while protecting sensitive areas within the watershed. Three constraint levels are identified (Motkaluk, 1997: 13): Environmental constraint Areas Level 1 are the most sensitive lands on which the study recommends no development occurs. Such areas include high quality ecological systems such as wetlands, woodlands, naturalized vegetation buffer areas and perennial watercourse reaches. Environmental Constraint Areas Level 2 consists of medium quality lands which have experienced some human intrusion. The lands still play a supporting role in ecological systems through the protection and ongoing management of ecological functions, such as groundwater recharge. The study recommends those lands may support some land use change, however the existing (pre-development) functions of the area must be maintained

both during and following construction. Areas which contain low quality lands which have already experienced significant human intrusion are classed as Environmental Constraint Areas Level 3. These areas may support change to an urban land use, however natural hydrologic conditions should be maintained and both terrestrial form and water quality protected where feasible.

In 1996 the City of Waterloo, in partnership with the Grand River Conservation Authority, Regional Municipality of Waterloo, Ministry of Natural Resources, local landowners, developers, consultants and members of the public contributed to Subwatershed Management Plans for Subwatersheds 309, 313 and 314 on the West Side of Waterloo. These studies built upon the findings of the 1993 Laurel Creek Watershed Study and resulted in detailed reports on the environmental characteristics of the subwatershed areas on the West Side. The mapping from these studies was used to define and confirm "Environmental Constraint Areas" as described in the LCWS for areas within the West Side Lands. Subwatershed plans such as those in place for the West Side of Waterloo have been used to support the creation of naturalized buffer zones between environmental features and have helped to provide the basis for various other land use management techniques (e.g. restrictions on impervious cover, lot densities, road layout, servicing, and City urban forest acquisition program). In 1993 the Laurelwood development was the first to encounter the stringent development recommendations of the Laurel Creek Watershed Study. The LCWS along with subwatershed plans have been integral to the planning process for the new West Side Waterloo communities.

2.3 West Side Communities

When the West Side lands were slated for development the City of Waterloo also developed a "West Side Vision" based on public and stakeholder input. Implicit in this statement are three key elements for guiding the development of the West Side: (1) a subwatershed approach to determining environmental sensitivity and protection, (2) new urbanism and (3) new standards for community development. The vision is as follows (Martin, 2001: 18):

> Against a backdrop of natural woodlands, attractively designed homes of various types rise up with the rolling topography. Smaller neighbourhood pockets are created by the landscape and the placement of built features including other uses and landscaping. Open spaces, pedestrian and cyclist opportunities are readily apparent and provide an obvious focus to higher density, higher rise mixed use centres which are visibly noticeable and feel within easy access. Streets are different – fewer cars, more people, and houses are closer to the street.

With approval to designate the West Side lands as a city urban area in the ROPP, the City of Waterloo made changes to its Official Plan (OP) in order to conform to this framework. A most significant amendment was Official Plan Amendment 16. This amendment brought into effect the recommendations of the LCWS. It would prove to have significant impact on future land development, particularly on the West Side of Waterloo as well as throughout the city. It secured the City of Waterloo as one of the very first municipalities in Ontario to have an OP with an emphasis on ecosystem based watershed planning.

As planners turned their attention to the west side lands between Erbsville Road and the western limit of the City, it was clear to them that modifications to the Beechwood Plan were necessary. This part of the city was unique with its partially wooded, rolling hills of morainic origin, offering a commanding view of the city. Planners were faced with the responsibilities of knowledge regarding ecosystem health that they did not possess when the earlier phases of the Beechwood District Plans were implemented. A model of subdivision planning that

hadn't been used in Waterloo before was put forward. The new model was built upon four key items - the West Side Vision, the LCWS, sub-watershed plans and the principles of new urbanism (City of Waterloo, 1996). The West Side was poised to be different than any other development Waterloo had yet seen.

It is important to provide an understanding for the reader of what did evolve on the West Side of Waterloo. This will be achieved by describing the communities in the context of the West Side Vision, the LCWS, sub-watershed plans and the principles of new urbanism. This section will explore the realities of the West Side's built form. To date three communities have been developed on the West Side - Columbia Forest 1, Columbia Forest 2 and Clair Hills (Figure 3).

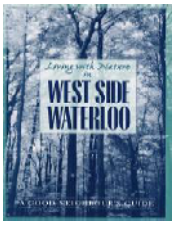
Figure 3 West Side Subdivisions

There are many significant design features incorporated into the development of the three subdivisions built so far on Waterloo's West Side with the aim to address a series of issues. The first of these issues is the natural environment. Lands identified in the LCWS as

Environmental Constraint Areas Level One were protected from development. In the first subdivisions to be built, Columbia Hills District I and II, this equated to approximately 21 percent (City of Waterloo, 1996) of all land and in the Clair Hills District 15 percent (City of Waterloo, 1997). Such areas included all creeks and their naturalized buffers (defined as 15 metres for intermittent creeks and 30 metres for perennial reaches), all woodlands, wetlands and hedgerows along with their minimum 7 to 30 metres of naturalized buffers. These environmental features were connected to create a continuous greenspace system to facilitate migratory movement of vegetation and wildlife, as well as providing a contiguous community trail system. Among the vision for these greenways was to provide the following (Martin, 2001: 33):

> A community trail plan that protects and enhances the natural environment first and meets a range of non-motorized user recreational needs. The community trail is to be planned amongst 607 hectares (1500 acres) of rolling woodlands, creek valleys and throughout future residential neighbourhood parks/parkettes, commercial and school areas on Waterloo's West Side. This system will also be linked with existing and planned community trails elsewhere in Waterloo, Kitchener and beyond.

Another planning feature was that subdivision development densities were based on protecting and maintaining the amount and quality of pre-development groundwater recharge to the greatest extent possible. Certain types of land uses, such as dry cleaners and gas stations, were prohibited from locating on groundwater infiltration and recharge areas. A community awareness program to inform builders, real-estate agents, residents and businesses was also established. Another major component of this program was the requirement for the distribution by developers of a brochure entitled *Living with Nature in West Side Waterloo* to first time home purchasers in the subdivisions (City of Waterloo, 1999). This was intended to educate residents about their neighbourhood features such as stormwater management ponds, naturalized buffer areas, living fences, woodlands, wildlife and the trail network. Additionally, all first time owners



were to receive a $250 gift certificate to purchase native species from local nurseries to plant on their properties. Property demarcation posts between public and private lands are also a provision, as well as vegetative corridors along property lines in the buffer areas which are called living fences. These subdivision plans were the first within the City of Waterloo to provide such an overarching prescription for environmental protection.

Within the subdivisions a series of neighbourhood parks and smaller more intimate parkettes were planned linked by pedestrian trails to other open spaces, schools, mixed use nodes and other existing subdivisions such as Beechwood. The city can require the developer to dedicate up to 5 percent of its total land holdings to the city for parks or other public recreational purposes. Most residential units fall within a one and half minute walk to a parkette. Each parkette provides a different opportunity for leisure and forms the function of a walkway from the roadway to the West Side trail system. It was noted, particularly in the Clair Hills subdivision plan, that there would be "less opportunity for flat, active playing fields" (City of Waterloo, 1998: 3), which may very well limit the types of leisure activities amenable to this location. Nevertheless, the sheer number and accessibility of these greenspaces is definitely a characteristic unique to these subdivisions, as compared to others in Waterloo.

Other land use and urban design guidelines are unique to the West Side. A new zone called the Flexible Residential (FR) zone provides a greater level of flexibility in the West Side neighbourhoods. In particular a broader mix of housing types on a streetscape basis is called for. This provides for less segregation of housing type. Garages are flush or set-back from the habitable portions of dwellings and porches may extend into the lot setbacks. The porches are to act as informal gathering spaces for residents promoting "eyes on the street". "White

collar" home businesses are permissible within these dwellings as well. This is the only zone within the city which also places a site specific limit on impervious cover. To protect the recharge areas that the LCWS identified, the city must through zoning regulate the percentage of recharge areas covered by material that is impervious (asphalt, concrete, rooftops, pools). This zone aims to help protect the quality and quantity of the municipality's drinking water. Not all lands within this zone have a limit, but for lands that do this translates to a minimum of 47.7 percent impervious cover in Columbia Forest 1, and 50 percent in Columbia Forest 2 (Cotter, 2008). In addition, although restrictions are on title for many properties, home associations were not provisions of these subdivision agreements. Neighbourhood associations have, however, been established within the three subdivisions. Two separate associations currently operate with a primary focus on organizing neighbourhood events.

In the Columbia Forest subdivisions streets are named after indigenous flora and in the Clair Hills subdivision the theme focuses on the European communities that were the origins of the settlers of Waterloo (City of Waterloo, 1997: 9). Efforts such as this may aid in creating a sense of place or connection to place. Entrance features into each development include treed boulevards. Sidewalks are on both sides of the roadway and are continuous throughout the neighbourhoods. Within each subdivision there are identifiable smaller neighbourhoods. Densities vary on a street by street, block by block basis. Within the plans the suggested targeted mix of density is 45-55 percent low density (consisting of singles and semis), 30-40 percent medium density (town homes) and 10 percent medium-high density (apartments) (City of Waterloo, 1997). The streets are narrower and consist of a modified grid pattern which is said to better distribute traffic within the neighbourhoods and protect the rolling topography of the area (City of Waterloo, 1997: 7) while reducing vehicle speeds and traffic volumes. With the combined reduced front yard setbacks and the flush garages, a vertical

enclosure is created. This is said to give residents an intimate feeling or sense of place (City of Waterloo, 1997: 12). With narrower streets comes a reduction in pavement. This helps to offset the impervious limitation placed on the development. For every square metre of less asphalt, the developer can add the same amount of rooftop. Furthermore, all the development west of Erbsville Road attempts to conform to the rolling hills. Beyond being an aesthetic principle, this also helps maintain the existing depth of the water table. In minimizing the amount of grading streets will be steeper. For instance these subdivisions are acceptable at a maximum 8 percent grade instead of the standard 6 percent, an increase of 33 percent compared to other locations within the municipality. This comes with a tradeoff, since in extreme weather conditions traveling such steep slopes may be difficult. As a condition of development approval such information was to be provided to prospective homebuyers (City of Waterloo, 1997: 13).

According to new urban design principles mixed use activity nodes are an important feature. Provisions for mixed use activity nodes are present in both the Columbia Forest and Clair Hills District Plans. In Columbia Forest higher density residential uses support the Columbia Hills/Laurelwood Mixed Use Activity Node. Public transit is routed along Erbsville Road adjacent to the node. This node consists of a high school and a small strip mall. The node is anticipated to evolve over time. Some buildings in the node may have residential uses on the ground floor; however, it is anticipated by city staff that some of these units may convert to commercial or office type uses. This type of development would support the node overall. Within this node the maximum impervious cover is 70 percent for commercial lands and 50 percent for residential blocks. In the Clair Hills Subdivision Draft Plan a mixed use activity node is located at the southern boundary of the subdivision adjacent to a roundabout. It is intended to serve as an employment centre and provide a mix of commercial, institutional,

cultural, recreational, entertainment, community services and public uses. Currently it provides only commercial amenities and is built as more of a power centre rather than the more diversified, pedestrian oriented commercial design more typical of new urban design principles. It was anticipated that a neighbourhood café or restaurant would be included in the development but this has yet to materialize. In the review of the Clair Hills Subdivision Plans only one resident, living external to these lands, expressed concern over a lack of commercial facilities (such as a grocery and video store and a lack of recreation facilities) being provided in the plan. This is rather surprising considering the obvious lack of such amenities in the existing subdivision and the opportunity for public comment in the early stages of consultation. Commercial sites tend to establish after a residential community has established proximate to such a node. These nodes are currently evolving at quite a rapid rate now that the residential community is more established.

As mentioned in the previous chapter, opposition to new urban design features particularly narrower road widths is often expressed by fire departments and transit authorities. The West Side is no exception. The average fire response time to Erbsville Road is approximately six minutes, depending on weather and traffic conditions. Nowhere in the planning process is it documented that the City of Waterloo Protective Services Division was concerned about the narrower street widths and the ability of their vehicles to traverse such roadway. There is at least one incidence of fire in the communities however where the fire department could not traverse the roadway because of the narrow widths compounded by winter snow conditions and cars parked on both sides of the roadway. With respect to transit, at the time of proposal, the transit authority Grand River Transit (GRT) did express concern over the road pattern which forces the transit service along Erbsville Road, the major arterial roadway external to the neighbourhood. Specifically roadways that are expected to accommodate a transit vehicle

must be designed with sufficient intersection radii and provide unimpeded access despite parked cars on the roadway. Alternative transit vehicles are possible during off peak hours, however, the standard forty foot transit busses are expected during peak weekday periods. As a consequence the standard accessibility is only a reality for 45 percent of the residences as opposed to the GRT's target of 95 percent (City of Waterloo, 1997: 40). It would appear possible then that fire services and transit may be issues of concern for West Side residents.

2.3.1 Aiming for Community Sustainability

It was the planners' intention to embrace the principles of community sustainability. They wished to foster a sense of place and community identity while providing new, safe, functional and attractive residential and mixed use areas. There was the intention, much like in Beechwood, to create a balanced, pedestrian-oriented community and yet with a greater emphasis on making the community consist of residential neighbourhoods and mixed uses that provided opportunities for a variety of housing types, employment, commercial uses, and community facilities. Natural features had been identified and their ecological functions noted – the goal was to create an environmentally healthy community. There was focus on doing so, not just within the West Side District, but also beyond by minimizing the threat to life and destruction of property and natural resources from these in downstream locations from potential flooding while also preserving, or re-establishing natural floodplain hydrologic functions. To a greater extent than in the Beechwood example, there was the intent to connect the west side neighbourhoods while also joining them to the rest of Waterloo. The mechanisms for this connectivity were to be roads, trails, pedestrian and bicycle pathways and transit routes. It was also a goal to make these connections open, convenient, safe and energy efficient. It was anticipated that these design features would provide a diversity of choices and opportunities for residents to live, work, shop and play, thereby creating a vital community. School, park and other community facilities and employment opportunities

would be adequate to meet both the current and future needs of the residents of the District. Furthermore, by the very nature of subdivision development being in stages, planners aimed at making each stage of development complete in and of itself. The West Side communities as a whole held much promise for movement towards greater levels of community sustainability. Now that the subdivisions are built and the residents have come to inhabit their homes, what are the realities of life on the West Side? The following discussion highlights many of the pertinent questions this research seeks to explore.

2.4 Research Questions

The West Side communities provide a rich and accessible social laboratory for investigating residential experience. The planning of the subdivisions was moulded by a vision rooted in the LCWS, subwatershed plans and the principles of new urbanism. Now the questions are to what extent are the goals of higher densities, pedestrian orientation, mixed uses, social inclusion, ecological and community sustainability successful on the West Side? The nature of the research questions raised fall into three broad themes: new urbanism, community sustainability and greenways in the context of Waterloo's West Side urban planning.

2.4.1 New Urbanism

The West Side subdivisions may be classified at best as a hybrid new urban development, as the neighbourhoods' built form has both new urban and conventional suburban features. Among the various planning goals the vision for the West Side idealized less car dependency for residents. Although seeking to shift auto dependency to reliance upon more sustainable forms of transportation such as walking and cycling can face many challenges, there are many urban design features which may support such a shift. In the first place the neighbourhoods do comprise a modified grid pattern and narrower streets reminiscent of traditional neighbourhoods. A grid pattern provides greater connectivity which if capitalized upon

supports more sustainable modes of transportation such as public transportation and walking. For instance, a grid pattern tends to create shorter street blocks. One might walk a shorter block to amenities within the neighbourhood as opposed to driving along a ring rode to get to amenities which are far away due to a separation of uses more typical of suburban street patterns. In addition to being narrower, West Side streets also have sidewalks on both sides. Narrower streets encourage slower speeds and sidewalks in turn support a high level of comfort for walkers and cyclists while sharing the road right-of-way with automobiles. Limited parking may also discourage auto use. On the narrower streets are narrower properties. Parking is at a premium with it being permitted only on one side of some streets. On street parking is further limited to narrow spots between driveways. Many homes also have small scale garages and limited driveway space for parking either their own or visitor's vehicles. Additionally, an extensive trail network and bike lanes leading out of the community may also encourage walking and cycling. The urban form within the road right-of-way on the West Side does to an extent discourage driving and encourage other modes of transportation as compared to more strictly conventional suburban streets.

On the other hand the communities are at the fringe of the existing City of Waterloo and although mixed nodes are now establishing with a stable population base to support them, many amenities such as a grocery store are not found within the immediate community. Additionally, although there is flexible residential zoning applied to much of the area, employment destinations exist primarily outside the communities. Public transportation is provided, but the route does not enter the subdivisions, rather buses travel exclusively on the main arterial roadway just east of the subdivisions. Trail networks, although readily accessible, may provide recreational as opposed to more destination oriented opportunities for walking and cycling. How residents might reconcile the advantages and disadvantages of

driving a car in their neighbourhood and beyond requires some examination. Whether residents will find other available options like public transportation accessible and convenient enough to become less auto dependent is to be assessed.

As well, the West Side Vision speaks of a form which includes higher densities and perhaps more mixing of uses than conventional subdivisions. For example a nursing home is situated within a primarily residential area. Condominium town homes are interspersed with single detached dwellings. How do residents experience these mixed urban forms? Are amenities such as groceries, restaurants, entertainment and recreational facilities within reach? Do the open spaces make higher densities somehow more palatable for residents? For instance, many properties have relatively small lots; do easy access and an abundance of greenspaces help make the trade-off more acceptable? Additionally, with a minimal grading policy, the rolling topography of the area is also noteworthy. How do residents experience the uneven and steep gradients on their streets, properties and in the greenspaces? One might anticipate some level of difficulty in maintaining steep grades on private property or navigating the sloped roadways especially in winter. Are steep slopes in greenspaces more readily accepted because they appear more natural than sloped backyards and roadways? If residents come with a strictly suburban expectation will they be able to readily accept the new urban design features such as narrower streets and higher densities? Questions such as these evolve directly from the West Side Vision.

2.4.2 Community Sustainability

As noted earlier there are five main goals of new urbanism which together may be considered to reflect the conditions of community sustainability. The West Side Vision is steeped in many of the goals of new urbanism. New urbanism brought attention to the physical elements of community sustainability but it is criticized for overlooking the more social components of

community sustainability. The same criticism can be made of the West Side Vision. In order to be a more viable goal a vision for community sustainability must incorporate a strong social component. Along with ecological considerations, sustainable communities are equally concerned with creating and supporting liveable places and a high quality of life. Examining the extent to which the West Side is achieving social inclusivity and ecological sustainability is an important area of research.

With a greater level of mix in housing stock it was anticipated that a diversity of residents would be drawn to live in this community. For example, there is more exclusive housing situated on cul-de-sacs as well as higher density town homes dispersed throughout the communities. There are properties where high premiums have been paid to back onto greenspace areas and other residences which do not have any premiums associated with them at all. Is the diversity found is this community tolerated and encouraged? To what extent is social inclusion a reality? Do residents have similar access to basic and essential services and facilities, even if they don't have access to a car? For instance, is by car the only way residents would consider getting to a recreational facility? Does the absence of formal recreational facilities on the West Side act as a barrier to either inclusivity or fostering a strong sense of community? Do the neighbourhood associations play a role in fostering inclusivity? There are currently two neighbourhood associations active in the West Side subdivisions. Are residents responsive to neighbourhood associations? What level of interest is there in participating in neighbourhood associations? To what extent is the new urban hybrid fostering community sustainability's social goals on the West Side of Waterloo? The social laboratory situated on the west side of Waterloo provides a rich opportunity to explore the realities of this place and attachment to place.

It is also said that the physical characteristics of a community help to create a sense of community. In the process of planning the West Side, planners focussed on creating a sense of place through the built form. Although the vision did not address this, the plans of subdivision do speak to fostering a sense of community through built form. For instance, features such as front porches, flush garages and reduced front yard setbacks were to create a vertical enclosure which would support a more intimate feeling in the neighbourhood. To what degree is there a sense of community on the West Side? What physical features do residents refer to as contributing to a sense community? Do the built and natural features contribute to a sense of belonging and enjoyment for residents? Are residents happy with their experience of life on the West Side of Waterloo? These questions beg for examination and the West Side of Waterloo provides an excellent setting for exploring them.

2.4.3 Greenways

The other theme that the West Side Vision did not directly address is that of ecological sustainability. Being situated at the fringe of the city of Waterloo, the West Side subdivision developments are considered greenfield development. As compared to infill this provided an extraordinary opportunity to maximize on existing greenspaces, incorporating them into the subdivision design. There was also an unprecedented knowledge base that planners possessed as compared to any other previous subdivision development, especially with regards to ecological processes in the subwatershed. This opportunity combined with an ecological responsibility has created communities with an unprecedented utilization of green infrastructure in Waterloo. For example, a 750 hectare environmentally significant forest, Forest Hills, is an obvious presence in the neighbourhoods, along with its protective naturalized buffers. Such buffers are also present along existing creek reaches. Stormwater management ponds punctuate the neighbourhoods and have been populated with naturalized vegetation. These types of features help to mitigate human impact on natural features.

Naturalization is a significant feature of the plant health care program on the west side. It is in obvious contrast to the more manicured, mown backyards adjacent to the greenways. From experience in resource management one might anticipate that residents will struggle with embracing the naturalized buffers. The terms "weedy" and "invasive" may punctuate their language when they describe the buffers. They may confuse the stands of goldenrod with ragweed and feel as though this naturalized vegetation is aggravating their allergy symptoms. Are residents even aware that such features exist in their neighbourhood? How do they experience these features? These more social aspects of community sustainability will be explored throughout this research.

It may also be said that in Waterloo there is an unprecedented presence of trails and parkettes in the West Side subdivisions. Parkettes are readily accessible in this community, being situation within a 3-5 minute walk of every residence. With such an abundance of parkettes one can't help but wonder how residents experience these spaces. With limited flat spaces in these subdivisions do parkettes meet the communities' needs for recreational areas? Do the trails contribute to fulfilling such a need? Do residents use the trails? One might anticipate that the very "wild" nature of the greenspaces associated with the trails may deter some residents. On the basis of what we know from the literature about greenspaces and reactions to trails one might also expect that residents particularly those living adjacent to greenspaces may find the trails as an invasion upon their privacy and a target for crime. The trails on the West Side were installed before residents moved in, indeed in many cases the trails were actually laid out before the lots were sold. The timing of trail installation may have positively affected the residents' attitude towards the trails as there were no surprises about trail location and the like. The contiguous greenspaces on the West Side provide an excellent opportunity to explore these types of questions.

2.5 Lessons Learned

The West Side development of the last decade indeed benefited from the lessons learned in the previous four decades in the Beechwood subdivisions. The evolution of planning from the 1960's to today is evident in the stories of the Beechwood District and West Side Waterloo subdivision development. This is an evolution marked by greenways which evolved from solely serving human needs to aiming to support the ecological integrity of the watershed. Urban form evolved from single use residential and separation to greater levels of mixed use and integration. As concerns regarding watershed health became paramount ecosystem based planning emerged on the development scene in Waterloo. The last phase of the Beechwood District Plan – Laurelwood as well as the West Side communities - benefited from the urban form guided by the LCWS and subwatershed plans. The level of direction that these studies have provided to development was unprecedented in Ontario at the time. The vision for the West Side of Waterloo is now a reality being experienced by residents who call this community home. The extent to which it is being realized is set to be explored. The three concepts of new urbanism, community sustainability and greenways introduced in the first chapter provide the basis of inquiry for the research questions. Although three separate concepts there is much overlap and application to planning. The West Side of Waterloo is an opportunity to explore these concepts, the visions and goals of planners and the realities of life as experienced by residents.

CHAPTER 3 - RESEARCH METHODOLOGY

This chapter will outline the method used to conduct the research for this project. This research is comprised of a multi-method approach which includes fieldwork (observation and unstructured interviews) and surveys of West Side residents and of the K-W area. All procedures were approved by the University of Waterloo's Office of Research Ethics. Each component of the research will be discussed in turn.

3.1 Fieldwork Observation

The urban interface provides a very rich opportunity for naturalistic observation of human interaction and impact upon the land. On the West Side of Waterloo there is an expansive area of land where private property meets public lands. This urban interface was the first site of observation on the West Side. Unobtrusive observations of the buffer area were recorded and photographed while walking on the established trail in the buffer on two separate days during the Fall of 2005. Additionally it may be appropriate to note here that the author's employment for the past decade has involved monitoring and managing human impacts in the urban interface throughout the City of Waterloo. This experience has provided a high level of familiarity with this research setting and topic. The photographs that were selected for inclusion in this thesis were those that illustrated well specified findings or illustrated specific concepts. The purpose of the field observation was to gather data relating to either environmental harm or benefit to the environmentally sensitive area. A second observation site was in the interior of Forested Hills ESPA #19. These observations were recorded and photographed while walking along existing trails or along sites established for the purposes of monitoring terrestrial features through the Laurel Creek Watershed Monitoring Program. The Laurel Creek Watershed Monitoring Program is an ongoing initiative aimed at measuring the carrying capacity of the watershed in the face of development. There are several terrestrial

monitoring sites throughout ESPA #19 Forested Hills. These sites were particularly useful locations for observation within the interior forest. A third observation site included walking along the sidewalks and streets of the three West Side subdivisions observing normative patterns of behaviour evident by such non-obtrusive means. At no time did the observation include any trespassing onto private property and or involve anything which would be considered a loss of privacy for a member of the public.

3.2 Unstructured Interviews

Unstructured, open-ended interviews are a tool used by social scientists to gain an in-depth understanding and insight into the reality of a group under study. They are a means for uncovering evolving normative practices, beliefs and value structures while permitting penetration into the life world and subjective reality of subjects. Where surveys are strong at gathering detailed descriptive information from a representative cross-section of a population and permitting patterns and associations to be identified with confidence, they are poor in areas of providing understanding into perceptions or the subjective "logic" by which people make their choices. In this research, 20 open-ended, ethnographic style interviews were conducted of West Side residents. Informants were selected by snowball sampling techniques. Initial contact with informants was made rather informally, often simply from being in the neighbourhood and using the trails. More formal contact was made by telephone whereby permission was requested for a personal interview. Those selected for interviews seemed to fall into three categories, open and approachable, discontented, or involved in their neighbourhood association or other organized activities at the local community level. Those interviewed include thirteen females, three males, two couples (i.e. husband and wife) and two group interviews of entire families. The majority of adult interviewees were aged late thirties to early fifties with none being younger than 25 and none older than 75. All those interviewed

were themselves home owners on the West Side. Not surprisingly, given the newness of these developments, most were the first owners of the property. Twelve of the twenty interviews included residents whose homes backed directly onto greenspace. All interviews, except one, took place at the interviewee's home, the exception occurring in the interviewer's home. The interviews were conducted between August and October 2005. Interviews revolved around nine primary themes, as follows:

1. Background on the selection process of their purchase on the West Side of Waterloo
2. Attraction to living on the West side
3. Experiences of living with nature
4. Personal use of the greenspace
5. Knowledge of protective design features built into subdivision land-use plans
6. Transportation methods
7. Sense of belonging
8. Community involvement
9. Social interaction

Interviews typically were about one hour in duration. All interviews were audiotaped and later transcribed and all informants received a letter of appreciation shortly after completing the interview. The informants' interview records were kept separate from names and addresses or any other identifying information. Permission to utilize verbatim responses in the written record of results was obtained with informants only being identified by a random number in each case. As part of the informed consent process, the researchers provided a guarantee of confidentiality with respect to all information provided by the informant.

3.2.1 Interview Analysis

Each interview was given a code from 1-20 so that they could readily be referred to without disclosing the name of the individual. The interview transcripts were reviewed and in the process of reviewing them, sub themes became apparent. The practice was to extract copies of the verbatim quotes to thematic files also including the informants identifying code. The

collection of quotes therefore reflected the subjective meanings and normative stances of this group of informants while constituting the analysis to be reported.

3.3 Surveys

Surveys are useful in obtaining more quantitative data, such as identifying patterns within a representative sample of the population and levels of association. The results for this research draw upon data from two surveys: The West Side Survey and the 2006 Kitchener –Waterloo Area Study (KWAS). The following describes the survey procedures:

3.3.1 West Side Survey

The West Side Survey constitutes the main data source for this research and was designed and administered by the researcher and her supervisor. It was a mail survey administered between March and April 2006 while complying closely with procedures recommended by the widely respected Tailored Design Method (Dillman, 2000). A disproportionate, stratified sample of 600 households was drawn from the West Side neighbourhoods west of Erbsville Road and abutting the Forested Hills Environmentally Sensitive Policy Area[2]. The random sample was drawn electronically in January 2006 from the publicly available property tax assessment records for the City of Waterloo. For survey purposes the unit of analysis was households with the survey mailed to the person(s) listed as the property owner(s), except in the case of commercially owned properties and absentee landowners which were excluded. On the assumption that proximity to the nearby woodlands may be a factor influencing the views of households to their neighbourhood's environmental practices the disproportionate sampling plan over sampled for households backing onto the woodlands while also ensuring representation of households within 100 metres, 101-250 metres and further.

[2] This is a sample fraction of .526 in relation to the total of 1145 homes existing in the three subdivisions of Columbia Forest I, II and Clair Hills at the time. The exceptionally high sampling fraction was required in light of the overall small population size in order to permit stable statistical estimates and also separate sampling strata (distance from the woodland).

The survey questionnaire comprised 19 pages and a total of 247 variables (70 questions) and was printed in full colour booklet form and included several charts and photographs (see Appendix A). Selected households were initially mailed an advance letter one week prior to the full survey administration notifying them of their selection along with the rationale for the study. The initial mail out of surveys took place on Friday, March 3, 2006 and included a cover letter, the questionnaire along with postage paid return envelope, an insert of frequently asked questions and answers as well as a $5 prepaid cash incentive. The incentive was included on grounds that prepaid cash incentives have been shown both to increase response rates for mailed questionnaires as well as to reduce response latency (Warriner *et. al.,* 2008). The survey itself was divided into 10 themes comprising sections A-J as follows:

A. Your home
B. Greenspaces
C. Living with Nature Booklet
D. Neighbourhood Forest
E. Natural Buffer
F. Neighbourhood Ponds
G. Trails
H. Transportation
I. Opinions
J. Background

As it was a household survey, not a survey of individuals, households were asked to have the most knowledgeable person complete the questionnaire and to consult among household members where needed.

All mail outs and returns used first class stamps. The mailings were carefully timed. The initial mailing was followed by a reminder postcard to all households five days later and then two full follow-ups (cover letter, questionnaire and return envelopes at three week intervals)[3].

[3] The first mail out was delayed by one month due to the unexpected call of a federal election which created a concern that some respondents might consider the survey an imposition during a national election.

All mailings were sent out on a Friday anticipating that they would arrive on a Monday with less likelihood of being set aside due to activities scheduled for the weekend. Each envelope was provided with a postage paid return envelope and respondents were informed of an alternative web version of the questionnaire to be completed on-line if that was preferred. The web based version was developed and administered by University of Waterloo Survey Research Centre. While web surveys on their own have low response rates, they are increasingly being used to complement other survey methods. The web option was provided with the anticipation that web returns would contribute to a net increase in response rate perhaps appealing to a younger, more technologically focussed respondent who might otherwise not complete a mail survey.

The response rate and response patterns to the two versions of the survey are described in Table 1. The overall response rate of 85.6 percent can be considered very good for mail surveys (Babbie, 1983; Dillman, 2000). In addition, nearly 80 percent of all returns were received in response to the first mailing, thereby largely negating the cost of the prepaid incentive (i.e. at a cost of follow-up reminders of greater than $4 each).

Table 1 West Side Survey return rate and pattern

Target Sample	Mail survey returns	%	Web Returns[4]	%
Non Deliverables	23	3.8		
Eligible Sample	577	100		
Initial Mailing	389	67.4	62	10.8
1st Follow-up	65	11.3	2	0.3
2nd Follow-up	40	6.9	3	0.5
Total Returns	494	85.6	67	11.6

[4] As a subtotal of all returns

3.3.2 K-W Area Survey

The opportunity to permit comparisons with a representative sample of non-West Side Kitchener-Waterloo residents was afforded by the closely concurrently administered Kitchener-Waterloo Area Study (KWAS). This is a biennial survey by the Sociology Department with the University of Waterloo through which student researchers are able to "buy" space to ask questions by agreeing to contribute their time to the survey's administration.

The sample for this survey was obtained using the city directories for the Cities of Cambridge, Kitchener and Waterloo. Respondents were selected randomly in proportion to the percentage of residents in each of the three municipalities for a total of 1999 residents in the sample. This was a mail survey administered in November 2005 with one half of the sample receiving a $5 cash incentive. In this case there was an overall 40 percent response rate. Several questions from the West Side survey were replicated in the KW Area Study (see Appendix B), those included:

- Strength of attachment to their neighbourhood.
- Neighbourhood features and opportunities affecting quality of life, sense of belonging, and sense of enjoyment
- Quality of their neighbourhood greenspaces
- Use of neighbourhood trails
- Neighbourhood forests and frequency of visits along with management of features and if restrictions upon use were effective
- Length of residency
- Demographics and household composition

3.3.3 Analytical Approach to Survey Data

The research questions identified in the second chapter of the thesis constitute the framework for the analytical approach for this research. Broad areas to be investigated include new urbanism, greenways and community sustainability. These areas are explored more specifically by delving into topics such as the factors that influenced residents to purchase

their home, their sense of belonging, how they rate the quality of greenspaces, how frequently they use the neighbourhood greenspaces and trails, how they travel about as well as a series of opinion questions. Anticipating that there would be some important influencing factors several types of comparisons are made. For instance a ready comparison can be made on several topics between West Side residents and those in the broader KW area. As well proximity to the forest is another example of comparison that the research methodology readily provides opportunity to explore. The statistical software program SPSS is used to investigate these comparisons based largely through descriptive and inferential statistics (X^2 and t-tests) as well as measures of association.

3.4 Advantages and Limitations

The advantage of the overall methodology rests in its multi-method approach which includes fieldwork (interviews and observations) as well as surveys (West Side and KW Area surveys). Where fieldwork is strong at uncovering the meanings, understandings and normative practices of residents, surveys are beneficial in determining patterns, cause and effect and permitting generalizations. Qualitative fieldwork has been utilized to examine and inform concepts, meanings and understanding whereas the surveys provide a solid opportunity to look at patterns within the communities. Furthermore the KW Area Study allows for a control group comparison and an additional level of exploration of identified patterns. A particular advantage of this multi-method approach has been the high response rate of the West Side Survey (86%). This readily facilitates an understanding of the communities by nature of having a representative sample and supports generalizable findings. On the other hand, a weakness can be found in the rather low response rate for the KW-Area survey (40%). A low response rate such as this raises the question if indeed the sample respondents are representative of the initial sample and may raise questions regarding response bias.

Nonetheless the KWAS still provides a fairly large, heterogeneous sample of respondents and a valuable level of comparison between the West Side and the greater K-W Area.

There are some broader limitations to this research. This includes that the basic premise of many of the questions posed to West Side residents were formulated based on the principle of new urbanism. The reality is that the West Side communities are barely an urban hybrid of new urbanism and suburban design which may raise questions regarding the validity of some conclusions seen to be stemming from new urbanism. Furthermore the exploration of community sustainability was pursued with a variety of questions focussing on the five components of community sustainability (higher densities, pedestrian orientation, mixed uses, social inclusion, and ecological sustainability). The important concept of "community sustainability" was only addressed indirectly via these 5 areas directly asked of respondents. Therefore the manner in which these concepts have been operationalized might be taken into question. Next, residents on the West Side have limited tenure by nature of the communities being only recently developed. This may limit the ability of West Side residents in responding to some questions compared to residents elsewhere in the K-W Area. Further, some processes such as the development of an attachment to place or a sense of belonging may not yet be stable or fully developed as compared to residents who have had a longer tenure elsewhere in the region. Finally there are always challenges regarding the validity and reliability of measures developed to assess attitudes and behaviours, due to the nature of the research questions which permitted only limited use of previously validated psychometrically sound scales and measures. Nevertheless these potential research limitations or weaknesses are balanced by the use of qualitative fieldwork and quantitative surveys which in combination provide a very solid multi-method approach and overall very sound methodology

CHAPTER 4 – SURVEY RESULTS

The research questions posed in the second chapter form the foundation of this chapter. These questions were explored through a multi-method approach including interviews, surveys and on-site inspections. The next chapter will focus on the interview findings while this chapter will focus mainly on presenting the results of both the Kitchener-Waterloo Area Study (KWAS) and the West Side survey while also illustrating the findings using photos from the on-site inspections. The results of the surveys make salient several broad patterns, as well as raising curiosities and anomalies. Through both text and table these will be presented.

4.1 New Urbanism

4.1.1 Deciding to Buy

Buying a home is a significant decision. Often there are specific factors which influence the decision to buy a home. Factors that influenced West Side residents in their decision making are presented in Table 2. The majority of residents relocated to the West Side from other new subdivisions, carrying with them a suburban expectation. The neighbourhood features uniformly important to residents when making their home purchase were those familiar to them. In making their selection the price and home type were most important factors. The single detached home has been the most revered in the suburban dream and likewise on the West Side, the vast majority of residents (87%) live in single detached dwellings. This is the type of home buyers were looking for and although there is a greater level of mix in the housing stock on the West Side, the single detached dwelling still dominates the urban form.

As buyers, residents also had a list of neighbourhood priorities they were looking for when making their purchase. Some features characteristic of new urban design such as mixed use

and pedestrianization were not high on the list. For instance having access to shopping and public transit were unimportant features when selecting their home. On the other hand the greenspace which new urbanism aims to protect played a definite role in residents' selection process. Residents identified that greenspaces were indeed on their minds when they made their decision to buy. Trails (82.7%), parks (80.8%) and woodlands (80.5%) were also important factors for the residents when they were making their housing selection.

Table 2 Factors affecting decision to choose home

	VI	SI	SU	VU	N
Dwelling Features					
Home type	72.6	22.3	4.9	0.3	483
Price	73.1	25.1	1.3	0.6	484
Location of Dwelling					
Shopping	7.9	38.3	44.0	9.8	475
Close to transit	7.9	18.7	38.6	34.8	474
Neighbourhood Features					
Parks	34.8	46.0	14.7	4.4	481
Trails	38.4	44.3	12.9	4.4	483
Woodlands	40.0	40.5	16.3	3.2	481
	new suburb	**older suburb**	**inner city**	**town/ coutry**	
Previous location	60	20	13	5.9	482
	single detached	**semi**	**townhouse**	**condo**	
Type of home	87	7.1	5.7	0.2	491

VI = Very Important, SI= Somewhat Important, SU= Somewhat Unimportant, VU=Very Unimportant

4.1.2 Density Impression

A focus in designing the West Side was to create a development with higher densities. Higher densities are a component of new urbanism and a shift towards greater sustainability. Higher densities can be undesirable to residents for among other factors they are associated with smaller lots. Table 3 addresses the questions of how West Side residents view higher building densities and what factors may mitigate negative perceptions of higher densities. On the West

Table 3 Quality of Greenspace as a factor in accepting new urban features

New urban feature or perception of feature					
Distance btw houses	**DL**	**SL**	**SD**	**DD**	**N**
	8.1	22	35.7	34.2	484
	SA	**A**	**D**	**SD**	
No Impression of overcrowding	7.6	51.2	29.4	11.8	484
Houses too close together	41.2	38.4	18.0	2.5	482

	X^2	p	G	N	Info
"too close"	25.040	0.003	-0.178	480	60% strongly agree too close and rate quality of greenspace as poor
"overcrowded"	30.610	<.001	0.283	483	60% agree overcrowded and rate quality of greenspace as poor 57.8% disagree overcrowded and rate quality of greenspace as excellent
slopes and grades	26.170	0.002	0.301	474	8.5% definitely dislike slopes/grades and rate quality of greenspace as excellent
front yard size	23.512	0.005	0.195	482	60% dislike size of front yard and rate quality of greenspace as poor
frontage	23.247	0.006	0.214	480	8.5% definitely dislike frontage and rate quality of greenspace as good
lot size	20.905	0.013	0.097	481	8.4% definitely dislike lot size and rate quality of greenspace as good
distance between houses	29.816	<.001	0.223	483	50% definitely dislike distance between houses and rate quality of greenspace as poor

d.f.= 9

DL = Definitely Like, SL = Somewhat Like, SD = Somewhat Disagree, DD = Definitely Disagree,
SA = Somewhat Agree, A = Agree, D = Disagree

Side one out of three residents (34.2%) definitely dislikes the distance between the houses. Indeed with higher densities homes are closer together and almost 4 out of 5 residents (79.6%) report that the homes are too close together. What is particularly interesting, however, is that for a majority of residents (58.8%) there is no impression of the neighbourhood being crowded. Hence the physical condition of higher density does not equate to the subjective impression of being crowded, a finding which might be considered surprising. Furthermore, nearly 60 percent of residents that rate the greenspaces as excellent disagree that their neighbourhood is crowded. The analysis demonstrates that as residents feel favourable towards the greenspace they also feel that it is less crowded. The association is not strong (Gamma =.283) but it is moderately in favour of this pattern.

Slopes and Grades on private property

Greenspaces may very well have a significant role to play in assisting buyers making tradeoffs between some familiar suburban features (larger lots, lower densities) and the more new urban features (smaller lots and higher densities). As previously discussed greenspaces may help mitigate the negative perceptions and realities of higher building densities (e.g. see Mohamed, 2006). For instance, greenspaces may make having less yard space more acceptable if there are greenspace amenities readily available in the neighbourhood. One cannot help but wonder to what extent greenspaces may help soften the impact of new urban design features for those expecting or used to a more suburban form. For instance, might the greater slopes and grades, smaller distances between houses, smaller lot sizes all be more acceptable if quality greenspaces were provided within the neighbourhood? The data indicate that this tendency does exist on the West Side of Waterloo. The higher residents rate the quality of their neighbourhood greenspaces the more amenable they are towards new urban design features.

4.2. Getting Around

4.2.1. Auto Dependency

This single greatest failure in achieving the West Side Vision may be the persistence of auto dependency. The fact that the communities are at the urban edge of Waterloo with few amenities, employment lands, or recreational facilities readily within reach may make driving a near necessity for most. Despite the fact that there are narrower roads, and sidewalks on both sides of roadways as well as many trails, such efforts to encourage pedestrianization have not made their mark in a significant way. The extent to which

Cars dominate the streetscape

Household Auto Dependency

residents are auto dependent and otherwise actively mobile is highlighted in Table 4. A majority of West Side residents relocated less than 10 km to the West Side and with them each household brought an average of 2 automobiles. An average of 86 percent of all travel is done by car as a mere 6 percent of residents report that they rely on their automobiles less or much less than the previous place they lived. These findings illustrate the failure of the West Side Vision's goal of ultimately creating a development with fewer cars.

4.2.2 Activity Levels

The West Side Vision also speaks of open spaces, pedestrian and cyclist opportunities being readily apparent and amenities being within easy access. If residents are no less auto dependent might they still possibly be more active? The urban form on the West Side does include many built features which might be said to otherwise encourage outdoor activity. A majority of residents (62.6%) agree that they are more physically active and that they rely on their car the same or more than the previous place they lived. The strength of this pattern is moderate (Gamma =0.317) suggesting that there may be other neighbourhood features which encourage increased activity levels. The increase in activity may very well be due to the opportunity for walking on the trails present within the community. Sixty-one percent of respondents who report having the same activity level never use the trails while 73.8 percent of those who say they are more active often use the trails. This pattern of trail use and increased activity level is moderate (Gamma =0.449) indicating that some residents are increasing their activity levels by using the trails. However planners anticipated residents would be more active, trading their cars for walking sticks. The extent to which activity levels have increased probably falls short of the ideal envisioned by planners. Overall, however, trails have not increased activity levels or influenced car dependency to the extent planners had originally envisioned.

4.2.3. Walking

Whether it is for recreation or reaching a destination providing opportunities for walking within one's neighbourhood was a goal of planners in designing the West Side. Increasing activity levels support a healthy community. The more active West Side residents are, the more they report their neighbourhood encourages walking. Sixty nine percent of residents who report being more active agree their neighbourhood encourages walking. The intention in providing trails on the West Side was to provide non-motorized recreational opportunities (City of Waterloo, June 1997). One aspect of the West Side Vision planners perhaps did not anticipate is the extent to which trails might play in providing the opportunity for recreational walking. It would appear that the activity level of residents is due more to an increase in walking on the trails related to recreational activities as opposed to the more destination type walking. Although there is an increased emphasis on mixed use within the subdivisions there is little opportunity for using the trails for the purposes of getting to a destination such as a grocery store. The schools and commercial nodes are not directly connected to the trail system within the neighbourhood. A further interesting note is that the West Side respondents report that the opportunity to walk in neighbourhood greenspaces positively affects their quality of life to a higher degree (by 10% more) than KWAS respondents report. This finding appears to indicate that West Side residents are satisfied with the recreational opportunities trails provide and do not seem overly disappointed by the reality that they cannot readily get to most of their daily destinations on foot.

Table 4 Automobile Reliance and Activity Levels

Relocation distance to WS	< 1 km	1 - 10 km	51 - 100 km	51 - 100 km	>101 km	N
	5.7	51.4	27.7	4.9	10.3	488
	Much More	**More**	**Same**	**Less**	**Much Less**	
Reliance on automobile	14.8	19.7	60.0	3.7	2.0	484
	Car	**Pub Trans**	**Bicycle**	**Walking**		
Average Percentage of Total Travel by Mode	86.0	1.0	2.1	3.5		491
	X^2	**d.f.**	**p**	**G**	**N**	**Info**
Activity Level and Trail use	92.192	16	<.001	0.449	479	61.1% same activity level and never use the trails 73.8% more/much more active and use trails often
Activity Level and Auto Reliance	38.054	12	<.001	0.317	479	62.6 % are more active but no less reliant on car
Walkability and Activity Level	36.016	12	<.001	0.275	478	68.8% agree neighbourhood encourages walking and are more active
Quality of Life: Walking	32.964	4	<.001	0.249	1245	98% of WS and 89.8% of KWAS report positive effect on quality of life re: walking in greenspaces
Average number of cars per household = 2 (N=483)						

4.3 Community Sustainability

4.3.1 Sense of Belonging

Pedestrianization efforts on the West Side have not made a significant impact on decreasing car dependency. This is an unfortunate finding but is almost expected for a greenfield community situated at the outskirts of an existing urban area. Getting out of one's car and walking also provides an opportunity to connect with the neighbourhood in a way that the car does not allow. Planners envisioned new urban features that would help facilitate a sense of belonging and a connection to place. In light of planners' goals on the West Side an exploration of the findings related to sense of belonging is called for. Present on the West Side of Waterloo there are many neighbourhood level and smaller scale elements which were anticipated to encourage residents to get out into the public realm.

Do the integration of private residential space and the design and placement of public space foster an increase in social interaction and in turn support the development of a sense of belonging or at least the development of weak social ties? This next section, and Tables 5 and

6, explore a sense of belonging on the West Side, particularly with regards to neighbouring and factors influencing a sense of belonging.

Table 5 Neighbouring

	Friendly/ Tight Knit	Neighbourly/ Polite	Distant/ Private		N
Describe neighbourhood	8.5	76.3	15.2		485
	SA	**D**	**A**	**SA**	
Ease of meeting people in neighbourhood	4.2	30.1	58.1	7.6	480
Streets and sidewalk layout encourage walking	2.5	12.9	66.3	18.3	481
Want more involvement in Neighbourhood Assc.	11	45.5	38.4	5.1	485
	Low	**Medium**	**High**		
Interest in a Neighbourhood Association	54.9	40.2	4.9		483
Average Tenure on WS	3.78 years	N=475			
Average Tenure in KWAS	16.71 years	N=296			
Average number of residents by name	3	N=487			

West Side residents have lived an average of 3.78 years in their neighbourhoods. Tenure in these neighbourhoods is limited by the fact that the subdivisions are new. That is not to say however, that some sense of belonging has not established. In the West Side survey residents were asked questions about neighbouring and sense of belonging. The same question of how one might best describe their neighbourhood was also asked of KWAS respondents. Most West Side residents would not describe their neighbourhood as “close and tight knit”. More than three out of four West Side residents (76.3%) describe their neighbourhood as “neighbourly and polite”. The fact that West Side residents know an average of three of their neighbours by name supports this finding. By comparison to their KW counterparts, West Side residents have a weaker sense of belonging, with one in four West Side residents reporting a very strong sense of belonging as compared to nearly three out of four having a very strong sense of belonging in the greater KW-Area. It may be important to note here that KW-Area residents have an average tenure in their respective neighbourhoods of 16.71 years (this is more than four times the mean average tenure of West Side residents). Despite this the

length of tenure variable does not distinguish between overall sense of belonging. Therefore the difference in the level or strength of sense of belonging between the two surveys cannot be accounted for by tenure. This is rather surprising. It may simply be that KW residents like their respective neighbourhoods better. All that can be concluded from this finding is that the sense of belonging on the West Side is undeveloped. Nonetheless an exploration of the degree to which sense of belonging does exist on the West Side is important and follows in the next section as well as in Table 6.

Table 6 Sense of Belonging

	X^2	d.f.	p	G	N	Info
Sense of Belonging	31.81	4	<.001	0.23	1268	26.3% WS have a strong sense of belonging 73.7% KWAS have a strong sense of belonging
Community facility access and sense of belonging	22.98	12	0.028	0.235	478	2.5% rate good access to community facilities and somewhat weak sense of belonging 45% rate good access to community facilities and somewhat strong sense of belonging
Very important to sense of belonging						
Playgrounds	29.10	3	<.001	0.248	1236	28.0% West Side, 41.9% KWAS
Churches	94.91	3	<.001	0.417	1239	9.5% WS, 25% KWAS
Type of people	21.04	3	<.001	-0.164	1250	47.4% WS, 43% KWAS
Walkability and meeting people	48.89	12	<.001	0.33	475	60.7% agree that the road and sidewalk layout encourage walking and that it is easy to meet people in the neighbourhood
Walkability and sense of belonging	32.11	12	<.001	0.309	479	83.3% strongly disagree neighbourhood encourages walking and have neither a weak nor strong sense of belonging
Greenspaces appreciation and sense of belonging	35.54	12	<.001	0.289	481	2.9% definitely like greenspaces and have a very weak sense of belonging 35.1% definitely like greenspaces and have a somewhat strong sense of belonging
SES						
Household Composition	Couple w kids	Couple alone	Adult alone	other		
	57.70	23.5	7.3	11.5	488	
Education level	Bachelor's Degree	College Diploma	Graduate Degree	High School		
	30.20	20	15.1	8.1	487	
Average income before taxes (2004)	$75 001-$90,000				487	

4.3.2. Neighbourhood Features Influencing Sense of Belonging

A variety of variables were explored in an attempt to understand sense of belonging on the West Side. Of all the variables explored six neighbourhood features stand out including community facilities, playgrounds, churches, "people type", neighbourhood walkability, and greenspaces. Each factor as it relates to sense of belonging will be discussed in turn.

4.3.2.1 Community Facilities

While the presence of certain neighbourhood features may play an important role in the sense of belonging within a community it may also be the case that on the West Side the absence of a neighbourhood feature may also influence sense of belonging. Of all neighbourhood features West Side residents most often reported that the availability of community facilities was lacking. The better residents rate access to community facilities within their neighbourhood the higher they rate their sense of belonging. There is an identifiable absence of community facilities on the West Side; there are no built municipal recreational facilities whatsoever. A long term care facility has opened its doors to hosting some community activities, especially those facilitated by the neighbourhood associations. Schools may help to fill this void within the neighbourhood and help foster a sense of belonging but perhaps not with the same potential as an actual community facility that is designed and developed for ongoing community activity and programming. In light of the lack of facility that might foster a sense of belonging, one can't help but question the extent to which other neighbourhood features might affect the development of a sense of belonging.

4.3.2.2 Playgrounds/Parkettes and other Greenspaces

Active neighbourhood areas of play have long been an important meeting place for children and adults alike. Respondents in both surveys reported that of all neighbourhood features explored, playgrounds contribute most significantly to residents' sense of belonging. Perhaps it is in the active areas of play that residents meet each other and establish a greater sense of belonging as opposed to the more passive areas. Despite the fine intentions on the part of planners to make parkettes a feature for environmental appreciation and active play, residents derive less of a sense of belonging from these areas than do their KW counterparts. This difference between the two surveys may be due to the fact that parkettes on the West Side have a limited appeal to residents, as will be further discussed in the next chapter, and that the

playgrounds of the KW area may appeal to a broader user group for a wider variety of purposes.

The more passive greenspaces on the other hand, are a treasured addition to the neighbourhoods. Might these passive greenspaces also mediate a sense of belonging? Among other neighbourhood features, West Side residents were asked to rate the extent to which they like their neighbourhood greenspaces. In turn there is a relationship between how much residents like or dislike their neighbourhood greenspaces with the sense of belonging they experience. The more residents like the greenspaces, the greater their sense of belonging. Both the active and passive areas on the West Side contribute to a sense of belonging residents experience (Gamma = .289) as illustrated in Table 6.

4.3.2.3 Churches

Churches have long played an important role in creating community and a sense of belonging. On the West Side there are no churches whereas throughout the greater KW area churches are found in many if not most neighbourhoods. Regardless of the presence or absence of churches both West Side residents as well as KW area residents report that churches contribute the least to their sense of belonging. The strength of this pattern is moderately strong (Gamma =.417). This finding may indicate that it may not be a lack of churches on the West Side that make churches less of a contributing factor to a sense of community but a decline in significance with respect to the role churches play in people's lives in general.

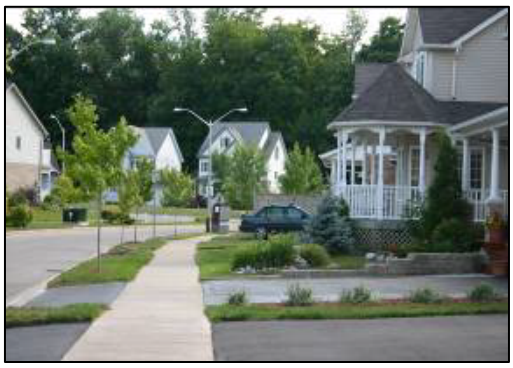
4.3.2.4 "Type" of People

Residents were asked about the sense of belonging they feel for their neighbourhood and how a series of neighbourhood features contribute to this feeling. All features explored rated higher for KW area residents as compared to West Side residents except for one. It is

interesting to note that for West Side residents the "type" of people living in the neighbourhood contributes to their sense of belonging more than it does for residents in the greater KW area. It is unclear as to what "type" of people residents perceive live within their West Side community. The more qualitative data may provide additional insight.

The survey data show that the most common household composition consists of an adult couple with children (57.7%) followed by adult couples living alone (23.5%). With regards to highest levels of education, 30 percent of residents have a bachelor's degree, 20 percent have a college diploma with 15 percent attaining a university graduate degree. The average household income before taxes (2004) was $75,001-$90,000. From the literature there are two schools of thought regarding sense of community and the "type" of people (see Brown and Cropper, 2001). It could be that residents perceive their neighbours are similar to themselves and this fosters a stronger sense of community. Or it could be an appreciation for the diversity that exists on the West Side that does so. In either case, but particularly the latter, positive interaction between diverse individuals is thought to help foster a sense of belonging. Such interaction is often the kind of activity that neighbourhood associations may facilitate within a community.

At the time of the study there were two neighbourhood associations active on the West Side. The data show that community interest in the neighbourhood associations is low for a majority of residents (54.9%) as is further involvement in the neighbourhood association (56.5% do not want more personal involvement). Neighbourhood associations do not appear to be an avenue that would



Short front yard setback

significantly contribute to a sense of belonging for the West Side communities. It may very well be the case that residents perceive their neighbours to be more like themselves and this may be a driving force in a sense of belonging on the West Side.

4.3.2.5 Neighbourhood Walkability

Increased street activity is said to foster cohesiveness and community safety (Beatley 1995). Pedestrianization was a goal of the West Side Vision. By combining a reduced front yard setback with flush garages, a vertical enclosure is created. These intentional design features were anticipated to give rise to an intimate feeling or 'sense of place'. Planners definitely envisioned creating a walkable neighbourhood where residents could readily meet one another. A majority of residents (58.1%) report that it is easy to meet people in the neighbourhood. An even greater majority of residents report that their neighbourhood encourages walking (66.3%). In fact the more residents view their neighbourhood as walkable the more they report that the neighbourhood is one in which it is easy to meet people. Having a sense of place is an important part of the attachment process. In fact the perception residents have about the walkability of their neighbourhood affects their sense of belonging as well. The more residents strongly agree that their neighbourhood encourages walking, the stronger their sense of belonging. The association is not strong but it is moderately in favour of this pattern (Gamma =.309). The planners' vision of creating an attachment to place vis à vis the vertical enclosure in the right of way appears to be occurring on the West Side.

4.4. Greenspaces

Greenspaces on the West Side contribute to neighbourhood form and ecological function. The planning for the West Side neighbourhoods has resulted in a number of urban design features intended to protect the environment and to facilitate its enjoyment. These include

naturalized buffers preventing encroachment into the protected woodlands, along with an extensive series of trails directing users around the forest and along designated routes within it, a series of stormwater management ponds (SWM ponds) to send runoff to the stormwater system and prevent flooding and stream bank erosion and ongoing terrestrial monitoring of the area's features. New residents are provided with an information booklet explaining the ecological features of their neighbourhood and the steps taken during planning to protect it. How do residents rate the quality of their neighbourhood greenspaces? Do they gain a sense of enjoyment from the many forms and functions of the greenspaces on the West Side? Table 7 highlights answers to these questions.

4.4.1 Greenspace Quality

Greenspaces have an obvious presence within the West Side neighbourhoods. There is an environmentally significant forest, as well as creeks, storm water management ponds, naturalized buffers and parkettes all of which are interlaced by trails. Although virtually every neighbourhood includes some form of public greenspace, there are perhaps few other communities within the region with such an abundance and variety of greenspaces. Overall the survey suggests residents of the West Side rate the quality of their neighbourhood greenspaces more highly than their KW area counterparts. This finding is mediated by proximity to greenspace as the closer residents live to Forested Hills ESPA #19 the more highly they rate the quality of the neighbourhood greenspaces. The strength of this association is moderately in favour of this pattern (Gamma =-.329).

Table 7 Greenspaces and Sense of Enjoyment

	X^2	d.f.	p	G	N	Info
Quality of Greenspace	32.794	3	<.001	-0.262	1272	WS 34.4% rate excellent KW 20.4% rate excellent
Excellent greenspace quality and distance from forest	41.603	9	<.001	-0.329	482	58.8% (adj to forest), 50.7%(w/in 100m), 34.8%(101-250m), 23.0% (>251m)
Very important Factors for Sense of Enjoyment						
Parkettes	26.63	3	<.001	0.251	1212	WS 42.1% KW 57.1%
Ponds	39.997	3	<.001	-0.279	1082	WS 46.7% KW 34%
Creeks	17.383	3	0.001	-0.14	1110	WS 46% KW 41.6%
Natural Buffers	12.882	3	0.005	-0.136	1106	WS 55.8% KW 50.5%
Trails	28.112	3	<.001	-0.274	1186	WS 66.2% KW 53.3%
Quality of Life re: sports activities	28.244	4	<.001	-0.24	1222	WS 24.4% very positive KW 36.8% very positive

4.4.2 Sense of Enjoyment

Greenspaces have the potential to greatly contribute to the sense of enjoyment that is experienced within a community. The cost of this appreciation is significant particularly for those residents living adjacent to greenspaces, and who also likely paid premiums to do so. Living adjacent to greenspaces particularly the expansive tract of forest on the West Side can have a significant impact on the quality of life residents' experience. Simply passively observing the forest from within ones' home is surely a welcome addition to life on the West Side.

4.4.2.1 Parkettes

In planning the West Side planners paid particular attention to making parkettes, the designated sites for active play, readily available to residents within a 3-5 minute walk of any residence. There may not be any other community within the region with such access to this type of amenity. Unfortunately for West Side residents, parkettes contribute less to their

sense of enjoyment than they do for residents elsewhere in the KW Area, with 42 percent of West Side residents reporting that parkettes are a very important factor contributing to their sense of enjoyment as compared to 57 percent in the KWAS (Gamma=0.251). Possibly this is due to the design of parkettes being less than ideal. Often these areas are sloped or otherwise undesirable for development purposes. Also these parkettes have had to serve purposes beyond recreation such as utility and fire access; uses which may have ultimately hindered the design and appeal of the many parkettes throughout the subdivisions. The parkette design also appeals primarily to the very young and at the time of the study there were few parkettes that had swings – a park feature favourite. The interviews as discussed in the following chapter further highlight these parkette issues. Residents report that their quality of life has not been as positively affected by greenspaces apropos of the opportunity to engage in sport activities as compared to other neighbourhood features and as compared to their KW counterparts (Gamma = -0.24). Of all greenspace factors contributing to a sense of enjoyment there seems to be a definite gap in providing the opportunity for active play in the greenspace, an absence that residents certainly miss as the data seems to indicate. Perhaps more attention to parkette design that meets more of a variety of needs would be beneficial to the sense of enjoyment residents experience courtesy the neighbourhood parkettes.

4.4.2.2. Ponds, Creeks, Buffers and Trails

Planners hoped that the environmental features within the West Side community would not only contribute positively to its' ecological sustainability but also to the sense of enjoyment residents would experience in their day to day lives. On the West Side stormwater management ponds have been naturalized and could be mistaken for naturally occurring ponds. Forty-seven percent of West Side residents report that these ponds are a very important factor contributing to their sense of enjoyment in the neighbourhood (G=-0.279).

Creeks have been left in as natural a form as possible particularly with the assistance of protective buffers. West Side residents similarly report that creeks are a very important contributor to their sense of enjoyment (G=-0.14). Trails have been designed and placed within these protective buffers and while serving a protective function they also provide the public with a recreational opportunity in nature. Trails more than any other neighbourhood feature most significantly contribute to the sense of enjoyment residents experience in their neighbourhood with 66 percent of respondents reporting that trails are a very important factor (Gamma = -0.274). These four features, ponds, creeks, naturalized buffers, and trails contribute to a sense of enjoyment for West Side residents more greatly than they do for their KW area counterparts. This may be due to the fact that there are simply more of these features on the West Side and they are readily apparent to residents. Or it may be the case that these features are popular with residents because of the attention to design, to conserving these features and embedding them within the design of the neighbourhood so as to readily facilitate their enjoyment.

4.4.3 Greenspace Activity

The West Side provides great opportunity to utilize greenspaces. The next section and Table 8 address the question of the success of these amenities.

4.4.3.1 Trails

On the West Side of Waterloo there are trails in every form of greenspace. Much effort went into making these trails fully accessible and to placing them within the naturalized buffers utilizing them as a protective feature. A large majority (96.1%) of West Side residents use the trails. While it is the case that the trails are popular, this diminishes the further one lives from the forest (see Table 8). The further residents live from the forest the less they frequent

Trail Cross-section

the trails. The strength of this association is moderately in favour of this pattern (Gamma =-0.354). It would seem that the easier the access is the greater the use. The primary activity on the trails is mainly walking with 93.4 percent of residents reporting engaging in this type of trail activity, followed by biking with 37.5% of residents reporting that they cycle on the trails. On the West Side amenities are not centrally located along the trails. It is difficult to utilize the trails to reach typical destinations such as shopping etc. Despite the fact that the trails have not greatly contributed to making amenities more accessible and active transportation a more viable option, 72.2 percent of residents report greenspaces and the opportunity they provide for walking, as a very important contributing factor to their quality of life. West Side residents report this to a greater degree than their KW counterparts with 10 percent fewer KWAS respondents reporting their experience is as favourable as West Side residents (Gamma = 0.249). It would appear that West Side residents value the contribution trails make to their recreational lives.

Trails are popular and managing human interaction with the greenspaces is important in order to protect the environmental features. While using the trails 53.7 percent of West Side respondents report that they venture off trails either sometimes or often. This is of definite concern since the impact of traveling off trail and into the sensitive areas by many users can have a significant impact on the long term well-being of the forest. Managing such human interaction within the greenspace is a challenge - one that cannot be ignored if the lands are to remain classed as a significant ecological area. It is also often speculated by managers that the public perceives that trails encourage crime. However, West Side respondents overwhelmingly disagree (96.7%) with the notion that trails encourage crime. Since West Side trails were laid out before homes were built, residents could self select accordingly, so it

is not likely that home buyers perceiving crime risks associated with the trails selected a home near a trail.

4.5.2 Forest Visits

Trails in greenspaces provide residents on the West Side and beyond with an opportunity to walk and bike surrounded by nature. Although West Side residents enjoy using the community trails not many have made forest visits a part of their daily lives. In comparison to West Side residents KW Area residents visit their neighbourhood forests more often than West Side residents visit Forested Hills ESPA #19 (see Table 8). Why this is so is unclear. Signage naming the park is not present although in recent years other interpretive signage has been installed throughout much of the forest along the designated trails. It could be a matter that to get to the forest one must travel west into the subdivision and most movement would perhaps tend to be eastward or out of the subdivision to other amenities. Residents could be too busy to enjoy daily or weekly visits. It might be that residents value more the prestige that comes with living in an environmentally significant area rather than actually using such an amenity.

Trail in Forest

4.4.4 Ecological Sustainability

The intention with the West Side development was to protect the ecological function of the area particularly by using among other design features, green infrastructure such as vegetated buffers and stormwater management ponds. Over the last few decades stormwater management ponds have become a relatively common feature of many subdivisions whereas vegetated buffers were first introduced to Waterloo through the West Side subdivisions. How residents view their neighbourhood's green infrastructure, what they know about these

features and their level of concern regarding their protection is described in the following section and Tables 9, 10, 11.

Table 8 Trail Use and Forest Visits

	X^2	d.f.	p	G	N	Info
Trail Use and Distance from Forest	34.738	12	0.008	-0.169	478	0% back onto forest never use trails 44% back onto forest often use trails
Quality of Life re: walking in greenspace	32.964	4	<.001	0.249	1245	WS 72.2% very important KWAS 62.4% very important
Frequency of Forest Visits	43.721	4	<.001	0.255	953	WS 9.5% more than once a week KWAS 11.3% more than once a week WS 25.4% never KWAS 9.8% never
Frequency of Forest Visits by distance from forest	61.235	12	<.001	-0.354	477	27.5% (adj to forest), 10.8%(w/in 100m), 9.0%(101-250m), 4.4% (>251m) visit frequently

Trail Activity	**Walking**	**Biking**	**Jogging**	**Skiing**		**N**
	93.4	37.5	19.2	4.0		491
Trail Use	**Often**	**Frequently**	**Occasionally**	**Seldom**	**Never**	
	24.4	26.2	31.8	13.7	3.9	488
Venturing off trail	**Often**	**Sometimes**	**Rarely**	**Never**	**Don't use trails**	484
	4.2	18.9	30.6	39.7	6.6	
Trails promote crime	**SD**	**D**	**A**	**SA**		487
	42.3	54.4	2.1	1.2		

4.4.4.1 Protecting Environmental Features

A large majority (86.3%) of West Side residents report that the environmental features in their neigbourhood make it a special place to live. For many (60.4%) the greenspaces are more important than other neighbourhood features for wanting to live on the West Side. Those residents that back onto the forest report this more than residents living elsewhere in the neighbourhood (Gamma = -0.328) (see Table 10). The environmental features are important to the West Side experience and one might therefore expect that residents would be concerned regarding protecting these features. Indeed the vast majority of residents (95.7%) are. It is important to note that 40.7 percent of residents say they along with their neighbours are probably damaging the forest, while at the same time a majority of residents (62.1%) are unaware of any restrictions in the forest. Knowledge of existing restrictions is important for the long term conservation of these lands. This is why city planners compiled an information booklet for residents entitled *Living with Nature on the West Side*. This booklet is intended to be distributed at the closing of each property sale. However, a majority of residents (69.5%)

report that they did not or cannot recall if they received the booklet. Of the 30 percent of residents reporting that they received the booklet, 90 percent read it and three quarters still have it. A majority of these residents found it informative. It is anticipated that planners had hoped to reach a greater audience than these efforts have been able to. It may be the case that the booklet would have been more salient to residents if the timing of delivery had been different as residents are often bombarded by paperwork and settling in upon purchasing a new home.

Table 9 Protecting Environmental Features I

	M important	**Neither**	**L important**		**N**
Greenspace importance to stay	60.4	33.6	6.0		485
Aware of restrictions in forest	**Yes**	**No**			
	37.9	62.1			475
	De Yes	**P Yes**	**P No**	**De No**	
Neighbourhoods damaging	19.7	47.4	31.2	1.6	483
	SA	**A**	**D**	**SD**	
Environment makes it special	33.4	52.9	12.5	1.2	485

M = More, L = Less, De = Definitely, P = Probably

SA = Somewhat Agree, A = Agree, D = Disagree, SD = Somewhat Disagree

4.4.4.2 Trails

As mentioned, protective, vegetated buffers surround all environmental features on the West Side. Trails are located in the buffers to provide an actual physical barrier to human impact on the features (for example protection from encroachment). Trail design was communicated early to prospective buyers and implemented early in the subdivision development process to provide protection to the environmental features during construction. Residents of both surveys were asked several questions about their attitudes toward protective features found on the West Side. Residents on the West Side approve of trails being incorporated into the subdivision design more strongly than their KW counterparts (Gamma =-0.292) (see Table 10). It may be the timing of communication and implementation of the West Side trails (a

timing which was a relative first) which makes the trails such a salient and welcome feature to West Side residents.

Table 10 Protecting Environmental Features II

	VC	SC	SU	VU	N	
Protecting Environmental Features	61.5	34.2	3.8	0.6	489.0	**Info**
Greenspace Importance	X^2	d.f.	p	G		
	24.211	6	<.001	-0.328	477	84% back onto forest rate as more imp. 50.7% >251m rate as more important
Approve of Trails in the subdivision	17.199	3	0.001	-0.292	1139	WS 84.3% strongly approve KWAS 74.4% strongly approve
Booklet						
	Yes	**No**	**Can't Say**			
Received booklet	30.5	45.5	24		486	
Read booklet	89.5	10.5			149	
Still have booklet	75.1	24.5			146	
	VI	**SI**	**SU**	**VU**		
Found booklet informative	36.7	61	2.3	0	135	

VC = Very Concerned, SC = Somewhat Concerned, SU = Somewhat Unconcerned, VU = Very Unconcerned

4.4.4.3 Buffers

As for the buffers West Side residents are approving (90.3%) reporting that there are more positives associated with them than negatives. They agree (88.6%) that the buffers are attractive and that they help to protect sensitive areas (79.7%). The greatest concerns regarding the buffers are the spread of weeds and presence of mosquitoes which may carry West Nile Virus. These buffers are naturalized and for the most part they consist primarily of goldenrod, although in many buffers active planting of other indigenous species has been completed by both the City of Waterloo and the developer. As in any natural area with water bodies or low lying wet areas nearby (such as a kettle lake), mosquitoes will breed. West Nile Virus has not been identified as being a problem in the natural areas of the West Side to date (McGoldrick, 2008). Despite these two concerns residents (92.6%) report that the buffers still make an important contribution to their sense of enjoyment.

4.4.4.4 Stormwater Management Ponds

Stormwater management ponds play an important role in controlling water quality and quantity in the urban environment. There are a variety of ways they can be managed. In Waterloo the ponds are naturalized and kept open as opposed to being fenced. Residents report that stormwater management ponds are visually attractive (86.2%). Residents however also feel that this neighbourhood feature contributes to a mosquito problem (79%). Despite the two concerns (84.3%) residents describe the stormwater management ponds as a positive neighbourhood feature. Having said this almost 3 out of 4 residents (74.2%) report that they could be more attractively landscaped. The vegetation of stormwater management ponds takes time to establish and over time as the ponds need to be dredged, the vegetation is inevitably damaged or removed in the process. These are two unique challenges in keeping stormwater management ponds visually attractive. Although West Side ponds are designed to look natural they are stormwater management facilities that are not conducive to winter skating or other recreational activities. More than three out of four residents (78.4%) are aware of the purpose of the ponds and agree (66.3%) that ponds are not good for skating. This is important information for the public to understand for the long term maintenance efforts of the ponds and the safety of all. From the data it would appear that an equal number of residents are willing to live adjacent to SWM facilities as who do not want to. It is therefore important to communicate early in the development process the nature and locations of SWM ponds so that potential buyers might appropriately self select their location in relation to such a feature.

Storm Water Management Pond

Table 11 Perception of Green Infrastructure

Perceived problems w greenspace	**DNP**	**PNP**	**PP**	**DP**	**N**	
Mosquitoes	4.6	22.8	37.2	35.4	481	
West Nile Virus	6.9	43.2	33.3	16.6	479	
Spread of Weeds	9.4	32.6	33.8	24.2	479	
Cycling off trail	19.2	61.2	15.4	4.2	479	
Extension of lawns and gardens	8.9	5.5	28.8	6.9	462	
Dumping yard waste	6.0	39.9	36.8	17.3	462	
Clearing vegetation	7.7	52.0	5.9	14.4	461	
SWM Pond	**DA**	**SA**	**SD**	**DD**		
Visually Attractive	42.1	44.1	11.5	2.3	483	
Contribute to mosquito problem	31.6	47.4	19.2	1.8	482	
Good for skating	10.0	23.6	36.3	30.0	477	
More attractively landscaped	34.6	39.6	21.5	4.2	480	
Not want to live next to a pond	22.7	25.4	25.8	26.1	482	
	VA	**SA**	**SU**	**VU**		
Aware of pond purpose	44.9	33.6	12.0	9.4	483	
	VP	**SP**	**Neither**	**SN**	**VN**	**N**
Ponds -/+ neighbourhood feature	48.7	35.6	11.3	3.7	0.6	480
Buffers	**DA**	**SA**	**SD**	**DD**	**Don't Know**	
Protect Sensitive Areas	22.8	56.9	8.9	1.6	9.8	479
Are attractive	32.1	46.9	12.5	5.8	2.8	477
Promote spread of weeds	15.3	35.0	29.0	8.0	12.9	477
Mosquitoes with WNV	15.3	39.2	22.2	4.9	18.4	478
	VI	**SI**	**SU**	**U**		
Buffers and sense of enjoyment	55.8	36.8	5.8	1.7		484.0
	SA	**A**	**D**	**SD**		
More neg w buffers than positives	2.3	7.5	61.6	28.7		476
	mean	**median**	**StD**	**Range**		
Scale of Happiness	8.22	8	1.48	9		480

DNP = Definitely not a problem, PNP = Probably not a problem, PP = Probably a Problem, DP = Definitely a Problem

DA = Definitely Agree, SA = Somewhat Agree, SD = Somewhat Disagree, Definitely Disagree

VA = Very Aware, SA = Somewhat Aware, SU = Somewhat Unaware, VU = Very Unaware

VP = Very Positive, SP = Somewhat Positive, SN = Somewhat Negative, VN = Very Negative

DA = Definitely Agree, SA = Somewhat Agree, SD = Somewhat Disagree, DD = Definitely Disagree

VI = Very Important, SI = Somewhat Important, SU = Somewhat Unimportant, U = Unimportant

SA = Somewhat Agree, A = Agree, D = Disagree, SD = Somewhat Disagree

4.4.4.5 Perceived Problems with the Greenspaces

In terms of the long term maintenance of the greenspaces there are some typical human impacts, which are occurring on the West Side. In her ten years of managing human interaction at the urban interface the author notes that the West Side has seen its share of encroachment cases, illegal dumping, off-trail cycling and

Lawn extension into buffer

removal of vegetation. Residents were asked the extent to which they thought a variety of human activities (such as dumping yard waste, removing vegetation and cycling off trail) might be impacting their neighbourhood's environmental features. Residents were not overly aware of these problems within their greenspaces (see Table 11). Either they do not see these activities as a problem or they have not seen their occurrences sufficiently enough to describe them as problematic. Residents identify more with nature affecting their wellbeing as opposed to identifying that the residents themselves may be impacting and posing a challenge to the wellbeing of the environmental features. Problems residents do identify as being associated with their neighbourhood greenspaces include mosquitoes (72.6%), West Nile Virus (49.9%) and the spread of weeds (58%); issues which were also identified for buffers and stormwater management ponds. It would seem that if residents could better understand the issues they perceive as problematic there may be less negative human impact on the environmental features. For example, if residents understood that mosquitoes breed in stagnant water and not generally in vegetation, residents might be less prone to removing the buffer vegetation adjacent to their properties. Protecting the environmental features from human impact is integral to the ecological sustainability of the area.

Dumping at forest's edge

Cycling ramps in the interior forest

Removing buffer vegetation

4.5 Conclusion

Residents are happy to be living on the West Side (mean on a scale of 1 to 10 is 8.25).

The forgoing discussion has made the case that new urban features, the development of a sense of belonging and the sense of enjoyment residents feel generally contribute to a positive experience of life on the West Side. The review of the survey results reveals a number of insights and patterns leading to several broad conclusions including the following. Quality greenspaces help soften the impact of new urban design features (especially shorter frontages, smaller lot sizes and the shorter distances between houses) for those used to more suburban designs. Auto dependence persists and the vision of fewer cars in the subdivisions is not a reality. Residents report that their activity levels have increased and that trails have played an important role in this.

Although West Side residents have a weaker sense of belonging than their KW counterparts there are some interesting findings regarding sense of belonging. Parkettes contribute most significantly to the sense of belonging residents feel despite the fact that residents are less than thrilled with their design and resultant functionality. Greenspaces in general mediate a sense of belonging – the more residents appreciate their neighbourhood greenspaces the stronger their sense of belonging. West Side residents describe that the type of people that live in their neighbourhood contributes greatly to their sense of belonging, West Side residents report this more so than their KW counterparts do. Walkability is also a mediating factor in a sense of belonging; the greater the sense of neighbourhood walkability the stronger the sense of belonging. Additionally the vertical enclosure seems to have succeeded in supporting an attachment to place for residents.

The greenspaces are a definite highlight of the West Side experience. West Side residents rate the quality of their neigbourhood greenspaces more highly than their West Side counterparts. Proximity to Forested Hills ESPA #19 is a mediating factor for this finding. Trails more than

any other neighbourhood feature contribute to the sense of enjoyment residents experience, followed by ponds, creeks and buffers. A majority of residents use the trails and this finding decreases with increasing distance from Forested Hills ESPA #19. The opportunity to walk in greenspaces (afforded by trails) is a very important factor to the quality of life residents experience. Trail blazing does occur and is a potentially significant impact to the environmental features of the area. Somewhat surprisingly residents living adjacent to the trails and greenspaces do not believe that the trails encourage crime or infringe upon their sense of privacy. West Nile Virus, mosquitoes and weeds top the concern list for residents regarding the natural areas, greenspaces and storm water management ponds in their neighbourhood. Residents are overall quite pleased with their experience of life on the West Side. The data help illuminate the concepts of new urbanism, greenways and community sustainability as related to the West Side of Waterloo. In general it can be concluded that there has been partial achievement of the West Side Vision however the West Side development falls short of making a significant contribution towards greater levels of community sustainability.

CHAPTER 5 – INTERVIEW RESULTS

5.1 Chapter introduction

This chapter highlights the findings of twenty unstructured, open-ended, ethnographic style interviews conducted with residents on the West Side of Waterloo. The result is a more in-depth understanding of and insight into the residents. Uncovered are some of their normative practices, beliefs, value structures and subjective rationality regarding their surroundings. The interviews help to better understand the perceptions and subjective logic by which residents are acting in their daily lives. These highlights are reported in the following chapter in the form of direct quotes and accounts constituting a vital complement to the largely statistical patterns provided by the previous chapter. In this chapter there are three broad categories of discussion – new urbanism, community sustainability and interaction with the greenspaces. These categories have emerged from and inform the earlier literature review. The research questions posed in the second chapter form the basis for the presentation of findings.

5.2 New Urbanism

The West Side Vision set the foundation for how the subdivisions on the West Side would take shape. What evolved is at best a hybrid form of new urbanism principles and suburban realities. Residents experience both the benefits of many of the new urbanist principles and the challenges of typical suburban design.

5.2.1 Deciding to Buy

Buying a home is a significant investment. It is a deliberate process that often takes time and effort. Buyers were discerning in their efforts to make their housing selection. Potential buyers came looking to purchase on the West Side with a primarily suburban expectation. The concept of typical suburban life with the added bonus of nature at your doorstep is what sold many on their purchase.

> We had a list of 10 things, like I am sure everyone does when they look for a new home. So ours was definitely that we wanted to be on a greenback, is that the word? So we were very fortunate to find the property we are at - that we got a greenbelt beside and behind us. But that wasn't one of the checkmarks. Behind us was for sure, we wanted to be in more of an upscale neighbourhood where there wasn't going to be the Ontario Housing and apartment buildings and things like that, that was number 2. We did not want to be on a bus route. We hated that because at the old house my house was right in front of the bus stop. So that was lovely, hearing that bus go by every half hour or twenty minutes. So yeah, it was a space thing. We run companies out of the home so we needed more office space, more storage space, two cars instead of one and that was the reason for the move. (04)

As might be expected, very practical considerations were also paramount in the decision to buy. One resident sums it up by saying "it was a combination of the style of housing and the price" (17). It also seemed to be well known which builders provided "the most bang, they give the most square footage for the smallest dollar and we knew that" (06). Residents were expressly aware of these types of practical financial considerations. Furthermore on this note many residents paid high premiums to live in close proximity to the greenspace amenities. For those who purchased adjacent to the greenways there was a relatively high cost of initiation. Buyers paid up to $46 000 in premiums for lots that backed onto the greenway. While residents appreciated and were willing to pay premiums for the benefits of greenspaces nearby they were relatively unaware of the environmental significance of the area.

> The funny thing was that a lot of the attributes we were looking for in our townhouse were actually built into this home. The main thing we wanted was the view from the attic. And we had these beautiful windows and as soon as we saw this we thought oh we have to go for this. And it was a beautiful home and we were really lucky to get it. The way life worked, it wasn't a home we had selected we never thought we could afford it but we actually could. During the selling of the home though, we had no idea it was in an environmentally sensitive area at all. There was no input about that at all. We received something called an urban design plan and there were some outlines on specifics on construction and specifics on the area. They mention the nonpervious thing. But as a new homeowner we didn't really understand what these concepts were. It was a very difficult

> process because I didn't know about recharge, I didn't know we were over the ground water, I never knew what we were getting into when we purchased this home. We though there were trees nearby and we thought it would be nice for the kids to be near the trees. (03)

Residents anticipated the type of people that would gravitate to this type of settlement. Two seniors who live in a condo on the West Side speak of wanting to be in an adult community but yet not wanting to be away from all the vibrancy family life has to offer.

> We wanted some peace and quiet…but we didn't want to be away from dogs and children and without all of that my god the activity that goes on right past our nose twelve months a year is phenomenal children everywhere, playgrounds everywhere, so that when the grandchildren arrive the first thing is "Can we go to the park?" It really has been well designed. (19)

Residents are pleased with their purchase and perhaps pleasantly surprised by the extent to which the greenspaces and community vibrancy have added to their experience of life on the West Side.

5.2.2 Parkettes

Families with children can offer vitality to a community. The local playground is often a place of gravitation for children and their parents alike. Most residential units on the West Side are within a one and a half minute walk of a parkette. Each parkette provides an opportunity for leisure and forms the function of a walkway from the roadway to the West Side trail system. Most of the parkettes are quite small, too small to provide any significant opportunity for active group play such as a pick-up game of soccer or hockey. It was noted, particularly in the Clair Hills subdivision plan, that there would be "less opportunity for flat, active playing fields"

West Side Parkette

(City of Waterloo, 1998, 3), which may very well limit the types of leisure activities amenable to the location. The most prominent feature of the parkettes on the West Side is their sheer number and accessibility. The following section explores the residents' experience of parkettes.

Studies have shown that users will frequent public spaces, if they can walk to them and if they are within a 3-5 minute walk of their home (Talen, 2006). Planners on the West Side had this in mind when they laid out the plans for neighbourhood parkettes. By far residents agreed that the parks were plentiful in number and readily available in their immediate neighbourhoods.

> I really like that probably every I don't know, every 200 or 300 metres there is another parkette with another little uh, small greenspace with kids' playgrounds...there are parks on every corner, you can walk to two playgrounds in two minutes from here never mind all the trails and stuff out there. (01)

From the perspective of residents, quantity and not quality was the planners' focus when designing the parkettes. Residents might very well be willing to trade the large number of parks for fewer higher quality ones. Furthermore, the parkettes are primarily appealing to a limited age range - young children. One resident speaks of this:

A larger West Side parkette

> It might have been nicer to have maybe one that is bigger than a lot of little small ones…we have noticed that once kids get to a certain age – the little playgrounds are good but they are going to outgrow them fairly quickly. (13)

Another parent develops a similar concern: "They need to give kids more to do to keep them out of trouble- so instead of giving them all these little parkettes give them one nice sized

space"(18). Additionally residents often spoke of what is in the play space as being of utmost importance as well. For instance, swings – something that appeals to all ages are virtually absent throughout the entire West Side. Shade is another missing amenity in the parkettes – a typical feature absent in new subdivision playgrounds. Another parent speaks to these missing amenities and to the overall quality of the parkettes in her opinion the parkettes are "pathetic…put swings in. It is a big thing. Monkey bars. And just a little shade, people don't go to the park in the summer it gets so hot, they are empty during the day." (04)

Another parent echoes the same concerns while referring to preteen boys in her neighbourhood:

> I think "Well, where else are they going to go?" The little park in the corner is a little children's park with a teeter totter. This is for small moms and babies but these little boys have nowhere to go – perhaps the high school and the new elementary school but that is quite far away for these boys (15)

Another concern regarding recreation areas is the lack of playing fields on the West Side. Planners recognized early in the planning stages that the lack of flat land would impact the availability of space for active playing fields. Families across the board mentioned this. One family with two teenage boys (15 and 11 years old) relayed the following comments: "They don't have enough space to play a soccer game and sometimes the neighbours complain because they make noise and stuff because they play on the street mainly." (20) Another parent echoes the same sentiment: "So if they found a level playing field that would have been really nice for the kids." (11)

For residents it would seem that the design of play spaces in the neighbourhood are increasingly important as lot sizes become smaller and house sizes remain quite large. Backyards are also often sloped and thereby place further limitations upon play. It is only

through the eyes of West Side children and their parents that it becomes obvious that the parkettes do not provide sufficient opportunity for play for children of all ages. Parkettes, although abundant in supply, have failed to meet the functional expectations of West Side residents.

5.2.3 Topography

The West Side Vision speaks of a rolling topography. A minimal grading policy was in effect during development to protect among other things the region's drinking water supply which in turn supported keeping much of the hilly terrain. Many of those interviewed mentioned either the aesthetic presence of a rolling topography or direct impact as a result of the hilly terrain. As mentioned, an often mentioned negative impact is the lack of flat open areas for active play. Additionally, the topography seems to negatively affect pedestrian and cyclists as well as motorists. Interviewee #08 explains how the hilly terrain affects her family.

> If you have little kids on that hill – its really hard to get them up especially if you're on bikes and they are trying to peddle and do their best and we end up walking our bikes - but the trip down is what is really scary – they can't stay on their bikes and they want to stay on their bikes. And so you're thinking my kid is going to have head trauma from going to the park. Not because of the park but because of the hill. And even walking is difficult to walk down that hill as a little kid without falling forward because it is so steep.

Likewise interviewee #06 explains how he sees motorists impacted especially in the wintertime.

> Unexpected things about the neighbourhood – this hill on Munich Crossing - wintertime, it is very treacherous in the wintertime and it's terrible to say but we have a great view. During storms it is so entertaining sadly because we sit and watch all of these vehicles usually huge SUVs try and get up that hill and they all go too fast and then they skid down backwards. That hill is a problem, it is not a major issue but it is a problem. The big thing is the snow removal on this hill. My neighbour and I joke now because we time ourselves to see you know exactly what time cars come up that hill because we try to avoid going up the hill with our snow blowers. Because we are out, people will get stuck and then we end up pushing people up or down the hill.

Another resident speaks to the issue of the minimal grading and the resultant topography as compromising public safety.

> One of the mistakes for example is the minimalized grading policy. Minimalized grading means that you allow the ground to follow along the same angles as nature gives it. Now when you plough down an area for one thing you are removing soil, grass and you are removing a lot of the protective components of the aquifer and the vicinity of our area but the problem is in keeping that natural angle you are keeping streets that have illegal grading at times. This street is illegally graded, the sides of my house are illegally graded this street here is nasty in the winter, we have cars sliding going forward and then they turn around and go backwards. These are the streets our children have to walk to and from school with at the same time people are going to work - in the middle of winter. So you have to make it safe. You have to make it safe. And this minimalized grading if it compromising public safety it's not worth it. It's not worth it. You have to put the public first. It was already known, it was a known thing. OK I'll give you an example of how grading affected me today. I compost. I had a bucket of eggs and rotten peaches and all kinds of stuff. I was walking outside my house I went to the side of my house to bring it to the compost, you know what happened? The grass was wet, I slipped and I poured the compost all over myself. That is my grading problem. That happened just this morning. I stank for that. My neighbour right next door, her mother broke her hip in the basement. The paramedics came; they could not pick her up because of the stairwell angle. So they had to get her from the basement door at the back of the house. They could not bring the stretcher up and down that hill because it is dangerous grading. They couldn't use either side of her house to do that so they had to go to that parkette, drive over the curb, drive to the back of her house, to pick up her mother with a broken hip and bring her to the hospital. If I fenced my yard what happens? What happens? This is poor planning, this is illegal grading - when it is that real for people, when it imposes that kind of safety hazard. (03)

The vision that planners had in mind with regards to topography is not fully being appreciated by residents. When planners implemented a minimal grading policy they were focused on protecting the moraine and thereby the city's water supply. Planners realized that the hilly terrain would nestle the community and provide a rather enchanting and inviting feel to it. Much of the city of Waterloo is quite hilly but perhaps none so much as the West Side. It is as a result of the efforts to

protect the environment that the West Side hilly landscape remains. The daily impacts that residents speak of were not anticipated nor intended by planners; they are unavoidable consequences of the form that has taken shape on the West Side.

5.2.4 Density and Mixed Use

New urbanism seeks to increase density and mix uses more than is typical in traditional suburban developments. The West Side vision speaks of higher densities and indeed densities are higher and lots are smaller. The existence of higher densities in their neighbourhoods is not something that is well understood by most residents. The concept that higher densities consume less land and may be more sustainable than conventional low density developments has not made the public radar. Comments such as "They are jamming the houses in. They put so much house on the property as the City will allow, it's not attractive… they are after tax dollars." (06) as well as "I think it's more of a developer trying to cram in as many as they could" (13) illustrates the lack of understanding and perhaps also illuminates how resident may feel – that properties are too close together. On the other hand one resident seems to have a clearer understanding of why increasing densities are a part of current development trends and of how to make higher densities more livable for residents.

> The real problem is that we are short of space in our area. Developers concentrate because the property is running out. And so what that means we have to modify the current housing situation into a more town home concept but in the trade off don't condense it if you do town home and condensed living increase the greenspace to work with to circumvent that. Because the house itself is to sleep to eat to grow. In terms of the greenspaces I think psychologically I think people would feel better if people lived in a condensed area of residents but have greenspaces to work with that are functional within it. Like I would like to see giant greenspaces, like a big giant park and then have the townhouses surround that park. So that you have a community works circulates and has a shared greenspace and observe the children. If you go into Europe in the most condensed areas they have these homes that have courtyards and those courtyard greenspaces are the shared lawns but they are beautiful. (03)

Higher density development patterns of new urbanism aim to mix different land uses including homes, shops, schools, offices and public open spaces. It also attempts to mix housing which may attract different income groups. The West Side vision speaks to the creation of higher rise mixed use centers, often called nodes. It is the amenities that one would typically expect within a nearby node that residents find is lacking in their community. Accessibility to amenities is a shortfall of the vision for the West Side. One resident speaks to this aspect of the development falling short of the new urbanist goals, the same goals expressed in the West Side vision.

> We are sort of an area that can be learned from – if you want to build a new urban subdivision - put something in that people can go to a mall or a school or a community centre – put something in where people can go and don't sort of leave them stranded and waiting for something...and doing the things that they aren't supposed to be doing - driving everywhere because it's the only way they can get anywhere. I sort of look at this and you go on line to look at some of the plans and examples of new urbanism and what should be in there and we seem to have a patchwork – some of these things – the narrower streets, and the short set backs and the front porches and things like that, but then we don't have the community centre. (17)

The vision was such that residents were not going to have to make tradeoffs between the type of mobility afforded residents in older neighbourhoods and the benefits of suburban living. Residents in a sense were to have it all –the peace and tranquility of the suburbs and amenities within easy reach. One resident however aptly describes the trade offs she feels they are making.

> It feels like we are kind of cut off from services and some amenities now there is that little strip mall and I am looking forward to having that little variety store and the dry cleaners and whatever… we talked a lot about living in the Uptown Waterloo because of that ability to walk to different amenities and I understand the tradeoffs you make to live in the suburbs but I still want all of those things. I would love for

> there to be a baker and a butcher and all those things within walking distance, but realistically it's not gonna happen. (08)

Another resident further describes the amenities he wishes were more readily available.

> It would be lovely to have a neighbourhood bistro café kind of idea where you could go or take people when they visit and have a dessert or appetizers to feel like there was some place that you could patronize in your neighbourhood. It would be lovely to have a pub – not a university hangout – but a place with atmosphere maybe with some live music where you could go and have a drink. (15)

In all seriousness, several residents spoke (with conviction) of their desire for a Tim Horton's coffee shop in their neighbourhood.

> We do not have a hardware store, we do not have a restaurant, we do not have a Tim Horton's, now can you imagine that is a social issue!... I would really like to get in touch with Tim Horton's head office and say "What the hell is wrong with you? Have you not looked at the West Side of Waterloo?"...we need an MDS Lab. (19)

On the other hand one resident believes that sufficient amenities already exist further a field in the greater community, that driving to amenities is desirable and preferred with regards to protecting the seclusion "suburban" life can provide.

> We heard a big Canadian Tire is going in down the way and even though that is far enough away from us but still its gonna just create more headaches and you know we've got enough stores in town that are open 7 days a week and people should be able to get their act together to get to the ones that are already located somewhere but you know… (07)

Along the lines of discussing mixed use, a nursing home exists in the mostly residential neighbourhood on the West Side. Residents spoke fondly of what the home brings to the community in the way of providing interaction. One resident describes the partnership that has evolved between the neighbourhood association and the nursing home residents and staff.

> We have got some good partnerships, like with the long term care facility, they have been – for a community association, they have opened their doors – you know, we use them once a month for our executive meetings. We have kind of outgrown them now because it isn't a large space but it still works for our executive meetings. We are going to be having a joint craft and bake sale at Christmas time so

> that is kind of fun…so they have been great – you go in at Halloween and they encourage all the kids to come in and all the residents are sitting there in their little chairs and they have all the candy and the kids go around - its just so cute and they love to see the kids – St. Nicholas [school] has come and done Christmas concerts for them so the seniors love that – that is kind of nice I think we had just moved in and it had already been - they had gone through the whole process of being approved and I guess there was quite a bit of concern when they first decided to come there. People were worried about the whole- you know would I find a naked man on my front step not know where he lives – you know there are Alzheimer's patients- so I think that was kind of a concern, it didn't bother me, but once you started find out about them- I mean there are a lot of safety - because they want to keep the residents safe. The Alzheimer's patients have to wear a special band that locks a door so that they would not be able to get out- so you know. And there were some issues with SARs because they sort of locked down the long term care places and that had been sort of a concern but they have been really great to work with and the way they look at it they are not an institution they are a "home" and the resident – this is their home and their community and they want to be part of the community and so it has been a really good joint partnership - we haven't had any problems. (13)

While the West Side has higher densities as compared to traditional suburban neighbourhoods true diversity in the housing stock is confined to primarily single detached homes and town homes. With regards to mixed uses, the West Side community design falls far behind the vision of new urbanist's prescription for mixed use on a finer scale. Residents to an overwhelming extent must drive to meet their daily needs. Although a strip mall has now established within the community and a power centre is in development, most essential goods can only be purchased at locations a car ride away.

5.2.5 Getting Around

5.2.5.1 Public Transportation

The vision planners had in mind for the West Side is based upon there being "less cars". Many factors needed to be in play for this reality to unfold one is the availability of public transportation. There is bus service to the edge of the West Side neighbourhoods, however the service does not enter the subdivisions. According to one resident she is pleased at the

lack of transit service in the community: "I am just so glad that it [the bus] doesn't come up here past Columbia and Erbsville. I am very happy about that". (07) Grand River Transit intends to provide residents with a bus stop within a 15 minute walk. A bus runs along the urban arterial roadway but does not enter into the subdivision. Because the public transit system does not enter the subdivision, there is a rather sharp contrast between how residents experience accessibility to the system. For instance transit is close at hand for residents that live near the urban arterial roadway. By comparison a bus stop can be more than a fifteen minute walk for those that live more interior to the subdivisions. One family that has chosen to own one car and to rely upon public transit said "We like to take a bus but it too far; it takes 20 minutes to walk to bus stop, it's cold and I have skin allergies to the sun." (12) By comparison a resident who lives adjacent to the urban arterial roadway and has also chosen to remain a one car family and utilize public transit shares a very different experience of accessibility.

> I wanted to be a one car family and we still are by choice and we wanted to be able to bike to work either of us and it's funny because when we moved here they said there was no transit into this neighbourhood in Waterloo but it's right outside here [on Erbsville Road]. (01)

Conversely two other households describe how they simply do not take public transportation at all:

> No my husband is a public transportation snob. Okay, I think he has taken it a few times with me when I lived in Montreal – I don't mind it but I am at a point in my life where hey, if I am going out I am going out to do groceries, run errands and I need the car I haven't ever taken public transportation here [in Waterloo].(16)

> We don't use public transportation. So if you are going to the mall you have to drive there…[for work] I wouldn't take the bus. No. I need more control as a physician of how I get to and from work. (10)

In order for residents to shift their transportation patterns alternative means of travel must be appealing in both form and function. One resident highlights a factor making the choice to use public transportation less appealing.

> There is no bus shelter and I would love a bus shelter and it's a very exposed area there is no where to huddle – you are out there in all the elements – and quite frankly in January and February it can be minus 40 and when the weather is bad the bus is later and you can be waiting for half an hour. (15)

Another resident who hadn't taken a bus in a very long time describes a very positive experience while using public transit while his car was under repair:

> It was my first time in probably 20 years that I had been on public transit. I checked out the website and called and talked to a person and got all the right times and it was really easy, it was like two bus trips and the bus driver was really helpful. He made sure – he said wait here we'll get you on the next one. It was great. (06)

Bus service to the community on the West Side is continually improving. Whether residents will shift their primarily singly occupied vehicle patterns is yet to be seen.

5.2.6 Pedestrianization

5.2.6.1 Narrow Streets

The West Side vision aspired towards fewer cars. New urbanist communities aim to provide an interconnected street network of street blocks lined more with buildings and less with cars. Cars however on the West Side have a definite presence. Parking those cars has created more issues and challenges for residents. The automobile is very much the primary mode of transportation for residents on the West Side. How many residents speak of their experience in their community is from the vantage point of clash between a form aimed at supporting pedestrianization and the reality of auto dependency. This is perhaps not a clash that planners envisioned the community would face. Residents often mentioned narrower roadways and

parking issues. The streets in the subdivisions are indeed narrower. On street parking is a significant issue in the community at times to the extent of jeopardizing public safety.

> There was a fire here a couple of years ago on Starflower I think in April maybe March on a rainy snowy combination night, and people were parked on both sides of the street and the fire truck couldn't get to the house and our neighbor who worked for the Toronto fire department was literally going with his wife up and down the street knocking on doors trying to get people to come out and move their cars so that the fire truck could get off the road. That was really the first time that it was really brought home – just how narrow those streets really are. Its been an interesting experience and I know some people have been really upset about not being able to park in front of their houses or not being able to during the winter – I personally don't mind our garage is wide enough we made the effort to clean out our garage and make sure that we can get one vehicle in there and one in the driveway. (17)

The streets of the West Side are narrower than the traditional loops and lollipop roadways typical of suburban development. One resident describes his experience of the narrower roads:

> I find the actual width of this street small to me. I don't know if it's like a new thing that they are trying to save space, to shove more homes in a certain area. It certainly looks like that. When I back my car out of my driveway I am almost at the curb on the other side of the street. It definitely wasn't like that at the old house. Definitely not at the old house - the street was wider.(04)

The streets also consist of a modified grid pattern which is said to better distribute traffic within the neighbourhoods and protect the rolling topography of the area. Furthermore, vehicle speeds are slower and traffic volumes are less. With the combined reduced front yard setbacks and the flush garages, a vertical enclosure is created. These intentional design features are to give rise to an intimate feeling or 'sense of place'. One resident speaks of these efforts towards pedestrianization and the clash with the persistence of the automobile and the associated absent infrastructure to support such persistence.

> And while the planners think that it would be lovely to sit on their front porch and be close to the road – and the logic of that and having

> small drives and this sort of thing. It's a nice thought, but if you don't have the infrastructure around it, making it actually work then it's just a headache. (13)

Efforts towards pedestrianization are obvious on the West Side. They are however somewhat overshadowed by auto dependency.

5.2.7 Parking

A byproduct of narrower streets is a reduction in pavement. This helps to reduce the amount of impervious cover in the subdivisions. However such design features have had significant impact on the daily lives of residents. For instance, many homes have single garages, narrow driveways coupled with narrow streets. These features limit the feasibility of having more than one car per household for many residents. The reality is that the vast majority of households do indeed have multiple vehicles. New urbanism is criticized for aiming to impose change by manipulative social engineering. As one resident points out, residents certainly did not self select for having one car, nor downsize to one car to live on the West Side:

> I have often questioned why you would move into a community knowing that you would have only really parking for two cars and have three, now that in my mind is just setting yourself up for trouble. That just doesn't make sense.(13)

The parking dilemma is greatest for homes with a one car garage. One resident speaks to this and the anticipation of self selection.

> One of the major flaws in planning for this area was the all in one car garage. I have a friend who has said that it was just ridiculous. The argument was that if people only have a one car garage then only people with one car will buy them, which is nonsense and the cars are always parked in the driveways and sometimes there are two and three cars parked along Columbia Forest. (19)

Significant effort is being made to address the parking issues on the West Side. There are winter months for which no parking is permitted on some streets under recently designated no parking areas. However, many residents have taken

matters into their own hands and have widened their driveways against the existing by-laws (see photo).

> We were told when we moved in that if we wanted our driveway expanded a couple feet or so we were told we couldn't do that – now the developer wouldn't do that but we could hire anyone we wanted to come in and just quietly do it – it might be against the bylaw but the thing is, there isn't anybody here supervising it – and these guys are all doing it. (19)

The City of Waterloo by-law department is monitoring the situation, having served fines in some cases beyond a certain grandfathering timeline. One resident speaks of the need for the City of Waterloo By-law department's involvement in the West Side community:

Expanded driveway

> We would like to see by-law more involved in the planning of communities because it seems like the communities are planned and then by-law has to sort of clean-up the mess. You know the streets aren't wide enough, parking on the streets, all this sort of thing and why are they not involved in the original planning process so that they don't have to clean up the mess at the end?(13)

What makes the parking situation increasingly more challenging for many residents is that the garages for many models of the homes do not provide adequate space to fit the number of vehicles they are supposed to. Few residents are aware of this trend in the building industry and therefore cannot make provisions to protect themselves from the outset. One resident however who works within the building industry anticipated the dilemma and was able to make changes to the house design to ensure his vehicles could be accommodated by his garage.

> They [the cars] both physically fit in the garage but we had to expand the garage as part of the building process… I knew it was typical to not have enough room for two cars because it is something I have seen in other areas, being in the construction business. (10)

While making a neighbourhood walkable planners at times make a tradeoff between parking in favour of walkability. One resident speaks to her appreciation of the walkability of her neighbourhood while also conveying a personal dilemma with regards to the need to honour automobile dependency:

> I like, although this is a bit annoying, the sidewalks. It would have been okay if they had just put sidewalks on one side, they have gone a bit overboard by having two sidewalks. Basically it cuts your driveway in half, so it would have been nice without having a sidewalk too. (01)

It does not appear that the benefits of reducing the number of cars on the West Side will be realized. For now the car is here to stay.

5.2.8 The Urban Arterial Roadway as a Barrier to Walkability

Efforts towards accessibility can be strained when local municipalities primarily oversee the residential development and regional governments are responsible for matters regarding the arterial roadway and public transportation. Silo effects can develop hindering a streamlined effort towards improving pedestrianization. The details that developers and planners preside over in the subdivision design do not necessarily include improvements to existing arterial roadways. This is in part due to issues of jurisdiction (i.e. regional versus municipal responsibility) and to the nature of staged developments. Subdivisions get built over time. Over time, as demand increases amenities are established. This seems to be the case on the West Side.

The West Side community is at the edge of Waterloo. It is linked to the rest of the city by an urban arterial roadway. Residents often mentioned this roadway (Erbsville Road) as hindering efforts towards pedestrianization for children and adults alike.

> They have an urban arterial road it breaks off into these subcommunities… It's an urban arterial so it's designed only for cars

> and buses…I would add a sidewalk along Erbsville Road along the East side. I would add a sidewalk along Columbia Street going to Sobey's. The problem with that is all these subcommunities don't have the population to sustain like a corner store, basic amenities that they need. As a result they encourage driving because in order for me to get milk I either have to take a half hour walk along a highway that is not sidewalked to get to Sobey's. There is no sidewalk there. I have to go with my 3 children to and from if I were to go without a car. They made me car dependent as a stay at home mom. They made me car dependent for my husband having to commute to and from work because there are no jobs along this area. This is all residences built up along a major arterial. It is not conducive to the policy that they are trying to get. On one side they say we are environmentalist, we're promoting a car-less society we're working towards all these good objectives and yet the manifestation of the planning does not reflect that, the manifestation of the planning puts the environment at risk, puts our water at risk, puts our children at risk. (03)

Getting to amenities is a car trip away however an urban arterial roadway properly designed can facilitate pedestrianization as one resident explains:

> If I am a young mom and I have to get to Sobeys or the mail box or whatever, I would be spastic about pushing my child in a stroller going down that hill and up the other side. There is no sidewalk there is no margin on the side of the road. That has to be addressed. We can't bloody well walk to Sobeys, it's dangerous. Please give us a sidewalk. What's going on with that? We have been here for five years almost. Why don't we have a sidewalk that goes from Erbsville Road to Sobeys. If they put in a sidewalk I would walk to Sobeys all the time. (19)

It is difficult in any case to make urban arterial roads, which are primarily intended for cars, pedestrian friendly. This is a liability of subdivision development at the fringe of an existing community.

5.3 Community Sustainability

Sustainable communities have been widely accepted as a conceptual framework for local planning. It is one of the three broad concepts explored in this research effort. Social

inclusion is a principle of community sustainability. The most important social consideration may be the creation of a livable place and a sense of place. This next section explores residents' experience of how the built environment may engender a special feeling of attachment and belonging as well as how other factors such as personal attributes (ethnicity and stage of life) may impact on neighbouring.

5.3.1 Diversity

On the West Side there was the intention to create a balanced, pedestrian-oriented community and yet perhaps an even greater emphasis on making the community consist of residential neighbourhoods and mixed uses that provide opportunities for a variety of housing types, employment, commercial uses, and community facilities. The development on the West Side was guided by the principles of urbanism – diversity, community, connectivity, mix, equity and the importance of public space. The implementation of these principles is challenging. As compared to diversity, equity is much more of an ideal. However, there are conditions of development that can be said to either foster or hinder equity and diversity. On the West Side there are examples of both schools of thought regarding mixing diverse individuals in close proximity. One school believes that proximity will enhance social contact when neighbours are similar. Many residents spoke positively of the similarity between themselves and their neighbours and how this contributes positively to their sense of belonging. It seemed that the fact that many residents are professionals fosters a sense belonging as one entrepreneur-resident states:

> At the risk of sounding pretentious - they are very large homes, the architecture is interesting, the colour of the stones and siding brick work and stuff like that is interesting. It does make it unique. It is a beautiful area. The people on the street are in good careers and family oriented and they are friendly, we all get along it didn't take long to get to know each other's names…Yeah I don't know what it is, people just seem friendlier here. I don't know maybe it is the work that they do. One's a nurse, one's a gym school teacher for high school. One guy is an engineer. Yeah maybe its what they do maybe it's that they

> are more publicly related people. I don't know… It's all adults, young couples that are starting families. Like I said before we all know we're going to be here for a long time and we might as well get to know one another and just be friends with one another. The couple across the street just had a baby a month ago or maybe two months ago. The couple was going to muskoka and we were going to muskoka the weekend after them so they said would you mind going to get your mail, will you just kinda make sure that the house is ok and kinda look and if you see a newspaper on the front step would you mind getting it so that it looks like someone is home. And we heard that you guys were going away and so blah blah blah. So that was nice. We hardly even know these people and that they said that if you scratch our back we'll scratch yours. So that is nice, that whole yeah I never had that at the old place. That's weird. And you ask me why and I don't know why… it's probably just the caliber of people that are here I know that sounds snobby. (04)

Another resident anticipated snobbery from her neighbours but was pleasantly surprised as she found neighbours just like herself and the absence of such an attitude.

> We were quite concerned that we would live among people who thought they were superior in some way and those sorts of things – it was a huge jump for us – it hasn't been painful but it has been noticeable – the change in what we had to put towards a mortgage. So we were concerned that people would be snooty or arrogant and that is not what we found at all just other folks like us who needed a bigger home for various reasons and wanted to have a little piece of nature they could call their own or at least look at. (08)

Similarity was a definite theme of how people related to the sense of belonging they feel.

> It's the best neighborhood I have ever lived in. The reason I think in a lot of ways is because of the way the houses were designed but I also think that a lot of people are about the same age and at about the same stage of life that is I mean we are all pretty well off. It's not completely that way there are some townhouse mixes, we do some Habitats. I don't think there are any barriers there other than shift working – those are the only people I don't see are the people who are on the opposite shift. You see them on the weekend occasionally and a lot of people have got kids around the same age you know a 7 year range, a lot of dog walkers you meet people that way. (05)

Furthermore residents also conveyed that facing common neighbourhood issues such as weeds in the park or parking concerns on the roadways has also brought their neighbourhood together.

> I think it's the idea of having an issue that sort of pulls you together- like having the parking issue that pulled us together because we would be walking down the street and people would say "Oh, can you believe that they are going to do this with parking?" It would come up so it's maybe something like that that sort of started it … its sort of this little cul-de-sac is sort of like Knots Landing well maybe not quite like that but everybody is just really close and I watched the house being built behind us and when they moved in we went over and introduced ourselves and said "Hi!" So now we see them all the time and we know their kids we stand on our back deck and they stand on their back deck and talk to each other that way.(17)

The second school of thought regarding the mixing of diverse individuals adheres to the idea that repeated contact, especially under good conditions is associated with positive attitudes towards racially different people and neighbouring. One resident describes an experience of informal contact and the diversity present on the West Side.

> They were from India and this was the first house that they had ever lived in and they are the same age as we are – when they moved in they had to come over and ask questions like what kind of flowers are those and when do you plant them and how do you mow the lawn and things like that…Certainly with some of the names that some of my kids play with …there are Indian kids up the street and one of the kids in my older sons class we were actually talking about this last night, is from Ethiopia so there is a really big mixture – you see Sikhs walking around with turbans and you know walking their kids you see a lot of different things in here. I am white Anglo Saxon and my husband is Ukrainian so there is a mixture and you see a lot of those mixtures too – that's part of Canada. (17)

The neighbourhood association in the Columbia Forest subdivision has over the years recognized the cultural diversity of their residents and worked towards integrating the diverse groups of people into common activities. For instance at a community barbecue one resident involved with the neighbourhood association describes how they tried to integrate residents of different cultural backgrounds:

> We incorporated things like veggie dogs and literally we had them in separate containers and everything like that so people who didn't eat meat could eat hot dogs that were tailored to them and people who didn't eat pork could have the beef dogs and they didn't touch each other that was the first year we have done that having learned from the first year and listening to people who said "Oh, we can't have that". (17)

The work of the neighbourhood association may be very important to creating social inclusion. Diversity can present an obvious challenge to neighbouring such as a language barrier that the following resident describes.

> It's not really that kind of neighbourhood [referring to how many other neighbours he knows]. We have one friend in the neighbourhood. But it is not like Laurelwood, it is not nearly as social. It was very, very social. Ridiculously social. We did have a neighbourhood association, we don't have one here. It is just that people keep to themselves more here, they are more reserved. Maybe we all feel the same way. Maybe we all came from a neighbourhood where people didn't. I don't know. I mean you can find a community here if you choose. I think. But it tends to be a lot of young professionals with really young children or older people with teenagers. There is a cultural barrier too with some individuals. Mostly a lot of Orientals that are coming in working with high tech industries and English is not their first language. So it is kinda hard to communicate so you say "Hi." and go on your merry way. (06)

In speaking with the residents it becomes clear that similarities play an important role to developing a sense of belonging. One cannot help but wonder how another personal attribute such as stage of life might also play a role.

> We have an Iranian couple who just moved in next door and they are a lovely couple - but we don't have the same relationship with these people as we did with the old neighbors but they don't have kids and we don't set up play dates. So you can't have the same relationship. And they are both grad students at the University. But certainly whenever you see them they set up time to chat and we have been to their house and we are hoping to have them to our place soon – you know so there is some interaction - different. The people on the other side of us have small kids – she has looked after my daughter and that sort of thing so it depends I would say it is more a case where- I think maybe the ethnic people do feel left out – but it might be more of a case of not having the same dynamics as your neighbour which would sort of you know- now I know. There is a Chinese couple that live

> across the street and we have met them – but their kids are in University – and I lived for a year in Taiwan and I kind of have an understanding of Chinese culture and they are very focused on their studies and their learning - from the time the kids are an early age they go to school focus on their studies and they go to bed so that is the way they do things and that is a cultural issue. (13)

5.3.2 Sense of Community

A sense of community can be developed by both formal and informal interaction.

Neighbourhood associations can provide formal means of interaction whether it be issue based or socially driven.

> The neighbourhood is wonderful. What was giving to us I guess was a bad deal, but what we have made from it and what we are doing with it is very proactive for the good. We [the neighbourhood association] have established strong relationships with Partners in Parks, we've utilized our neighbourhood newsletter to inform people about our sensitivity of the environment, we have used that as a vehicle to get the neighbours together. We have festivals, Earth day festivals, we have litter clean-ups, all kinds of programs to help encourage people to be proactive to build this as a better community…So we are trying to be proactive with the bad mix that we've had, it has actually worked to bond our community much tighter than most. Because we are all coping with the same things, we all have the same challenges so let's see how to make the best of it. And in that we build a sense of community.(03)

Another resident describes her level of interest in the neighbourhood association as being relatively low but that to some extent such an association could be a very practical resource for residents.

> I think that whole philosophy that tall fences make great neighbours is typical here. But also it is nice to have contact with your neighbours within reason. We don't want them to annoy us, cause we have had annoying neighbours before. But a neighbourhood association would be good for things like, just trying to find a babysitter. (06)

By no means however is a sense of community only created through formal means. Residents readily describe positive, rather spontaneous interactions with their neighbours. This resident describes how six neighbours bonded over the challenges that wintertime can present.

> In the winter we kind of interact while shoveling or snow blowing. In fact last winter there were six of us who got together to shovel out a bus. Now I think that that is pretty good interaction for a neighborhood. That's darn good and even before when the neighborhood was much smaller and the plows had us as their lowest priority understandable - we would all go and just shovel it out - you don't want to be trapped in there in the middle of the night and your kids got croup or something like that and you can't get the heck out of there so it tends to be a little more spontaneous interaction than anything else. (05)

Diversity, similarity, formal and informal means of neighbouring all play a part in community sustainability and social inclusion on the West Side.

5.3.3 Urban Form

Diversity also extends to the housing stock in a neighbourhood and to how these homes are laid out. On the West Side there are some streets that are more rectilinear and higher in density as compared to the larger homes with lower densities on the cul-de-sacs. A resident involved with the neighbourhood association describes her experience with residents living along a cul-de-sac. She describes what planners have anticipated that the way homes are laid out can either hinder or foster equity and diversity.

> We have had a really hard time getting an inroad into the court [residents who live around the cul-de-sac], they have kept very much to themselves not been part of the community and really not been a big support almost to the point that we [the neighbourhood association executive] felt like – someone mentioned this to me in passing that it was said: "Well we have the big estate homes and those are all just the smaller homes." so sort of that snobbery almost because they have the big homes they have the bigger lots sort of the more prestigious area. Now we had an event- a Hawaiian Luau in February and we got three families from the court and that was like, my red letter day because that was the first time when we have actually had people from the court support our event and be open to talking to us so we have made some inroads that way –but the court is kind of closed.(13)

The vertical enclosure of the sidewalks and short setbacks were also intended to help facilitate a sense of community. One resident describes a rather spontaneous neighbourhood gathering on a neighbour's front porch and lawn.

> Some people do [use their front porch] our next door neighbours do. They hosted a little get together after the kids went to bed. There was everything from Sangrias to Pina Coladas and at one point I brought out cognac and I don't know. There were two sets of monitors so people could hear their kids and it was all on the front porch and the lawn. I thought neighbors might complain – but people just came over to join the party so it was really neat. (08)

Residents identified the lack of community facilities on the West Side as a hindrance to their sense of community in her immediate neighbourhood.

> I feel like I'm part of Waterloo, I don't necessarily feel like I am part of Clair Meadows or wherever the hec I live, I feel like I'm part of Waterloo. I think it is because I use more of the City facilities. I'll use the Swimplex and that is for all of Waterloo whereas the little neighbourhood around here hasn't done anything…And there aren't any neighbourhood community centres that I know of around here and there aren't even any schools because it is so new, I know they are planning of building a school like a few streets over but who knows when that will come in. (01)

Another resident describes his neighbourhoods as "a very pleasant neighbourhood but no where as social as there is no social gathering place."(06)

On a final note, the sense of community that establishes on the West Side contributes to the well-being of the whole community. This resident speaks of her sense of the realities of the principles of urbanism as they have developed in her community.

> I love walking through this community. I can call so many folks by name, I know so many folks on so many streets. And each street has within its own subculture. And so there is a unique identity that takes place, every street has its own subculture which feeds onto the larger community at large and that larger community feeds into the body of the city and that feeds into the municipality and its like a ripple effect. (03)

Urbanism done well creates a place where diversity is tolerated and celebrated where there is no sharp separation of income or ethnic origin. In developing more sustainable communities several factors must be considered including physical form and social considerations. The most important social considerations may be the creation of a "livable place" and a sense of place. A sense of place appears to be developing roots on the West Side.

5.4 Interaction with Greenways

The greenways on the West Side of Waterloo provide an opportunity for residents to interact with nature. The greenways consist primarily of trails, buffers, storm water management ponds, and environmentally significant forested lands. How residents interact with each of these components is explored in this next section.

5.4.1 Trails

Trails are a common feature in many subdivision designs. It is anticipated that residents will be afforded the opportunity for recreation and the use of off-road transportation to local amenities. Trails help to combat the liabilities attributed to subdivision design - lack of mobility and segregation. No longer are residents forced to drive assuming amenities are located within a reasonable travel distance by means such as bicycle or on foot. There are both enjoyed benefits and perceived concerns by both users and adjacent residents regarding trails seemingly wherever and however they are laid down. Trails often are the main public feature of the greenways they surround. Much effort on the part of planners and designers is made to ensure trails remain accessible by all residents. At the same time trails can act as a physical barrier when placed at the periphery of a conserved greenspace thereby helping to curb encroachment by adjacent residents. Encroachment occurs by both adjacent

Trail cross section

residents who extend their backyards and by trail users who trail blaze (go off the designated trails). This section explores a number of both positive and negative perceptions of the neighbourhood trail system among residents of Waterloo's West Side.

To begin, how aware are residents that the West Side trail system even exists? Often the interviews revealed a sense of frustration on the part of residents that wished to use the trails but lacked the knowledge of where and how extensive the trails actually are.

> Well I don't think people know about all the trails that are out there or how extensive they are. But on the other hand this is selfish but when you find a nice spot without lots of people you don't want to tell a lot of other people to go there because then it loses the tranquility that you experience there. But we just weren't aware of what trails were back there. We found them by accident. (01)

The literature suggests that residents living adjacent to trails often cite concern over an increase in crime (especially robbery) and a decrease in privacy when they live adjacent to trails (Ryan 1993). However, it is interesting that no one living adjacent to trails even when asked mentioned either of these concerns. Instead it was trail users who spoke of safety concerns and privacy. With regards to safety one resident spoke of her apprehension while using the trails.

View of backyard from trail

> I don't know if this is from Little Red Riding Hood as a child but we sort of associate the woods with bad people and I guess the idea is that if somebody wants to jump out of the woods at you they could because there is really nobody around…my logical reasonable self says if somebody wants to get me they are going to get me no matter what if it is on a street or waiting at a bus stop or on a trail but when I am out walking I often think there could be somebody out here who wants to do me harm. Sometimes I think I shouldn't because it gets very dark in the summer because of all the foliage and nobody knows where I am – when I am on the trails backing on to people's backyards I feel fine although even that can be remote or isolated. (15)

While another trail user spoke of how she feels as though she is invading upon the privacy of those who live adjacent to the trails, especially along portions of the trail where the grade provides an easy site line into the rear yards (see photo).

> The only thing about that that we don't like is the trail. They have the house then they have the backyard and it's almost like the trail is raised. So everybody can see into those yards and their house – what they are doing. So I would have changed that somehow or put the trail more into the forest instead of right on the border. Maybe that is part of the boundary of the vegetation start and stop I don't know. But um, I don't know what the homeowners think of it. But I use the trails and it is kind of awkward when they are lying in their bikinis outside in their yard and you're on the trail above watching everything. (01)

Again, rather surprisingly no one living adjacent to the trails even when asked expressed concern over a lack of privacy due to the trails. Adjacent residents instead spoke of the privacy they experience. One resident describes his experience of near seclusion while being in his backyard which backs onto the adjacent ESPA:

> I was outside barbecuing and it was raining and I had the side burner going with food and I had a raincoat on and there was quiet cause no one was outside and I looked up and I saw the trees and I made a comment to my wife saying this is kinda like having my own cottage, just no one out here you can hear the birds, see the trees if it wasn't for the fence beside me you could be out in the middle of nowhere so I mean that is great. (6)

Overall both trail users and adjacent residents experience the trails in a very positive light. Parents describe the kinds of experiences they hope for their children living in such close proximity to a natural area: "For my kids I want them to be close to nature outside away from video games and television – it's a great environment for that" (18). How children and adults experience nature can have significant impact not only on their lives but also on the wellbeing of the forest. Unfortunately trail blazing is occurring at a potentially significant cost to the viability of the forest.

5.4.1.1 Trail Blazing

Trails serve a threefold purpose – recreation, transportation and anthropocentric impact mitigation. A significant concern for those entrusted with the responsibility to manage the natural features surrounded by trails is that of trailblazing. Trails are intended to provide limited access to a greenspace. The paths are often painstakingly selected and implemented with priority given to causing the least impact possible. Nevertheless ESPA 19 is being impacted by trail users going off trail. This creates a greater edge effect significantly decreasing the amount of intact interior forest area. It is important that users stay on the trail. Parents and children alike disclosed that they do venture off trail. Survey data as well indicate that residents do go off trail. The interviews with residents help illustrate why. One parent describes the fun they see their children having off-trail. "Yes, they go in there and they make teepees and they are bush people all of a sudden and you know they play survivor without voting anybody off just a role play thing, they enjoy it." (16) (see photo) It can be difficult to defend the need for users to stay on the trail when one envisions the fun children can have off trail in the forest by simply playing about. One resident expresses this sentiment. "There are a lot of kids who are in the bush building forts and houses and stuff and they play hide and seek and they ride their bikes. That is needed. Children need those wild places to play in." (03) (see photo)

Off trail - teepee in forest

Tree fort in forest

Trail blazing by cyclists may cause the most rapid and expansive degradation of the forest. A seemingly innocent ride off trail can cause virtually irreversible damage including, soil

compaction, introduction and spread of edge species into the interior forest, the reduction of interior habitat and tree cutting. A parent describes her children's and their friends' trail blazing activities. "A bunch of them take their bikes and they will do jumps…my guys bike a lot on the trail and they take off looking for deer, they are so intent on finding deer." (7) Perhaps more residents would travel off trail if they weren't so afraid of the forest. Fear of the forest was consistently stated as the primary factor keeping users on the trails.

> Oh [the trail] it's beautiful, gorgeous. Like that is actually one of the nice things about being in an area like this, in that every season is gorgeous in its own way I mean the fall obviously the colour, the winter because of the snow that catches on the individual branches so it looks like a friggin' postcard at some points in the winter. It is nice to walk on the trail at any given time of the year because of that... I never even thought of even walking through [off trail]. I would just be afraid of snakes and things. (4)

Managing human impact is a most definite challenge in the management of resources on the West Side of Waterloo. Trails provide an excellent opportunity to enjoy nature without disturbing it. But there is a fine balance between appreciating and harming it. Overall the reactions of residents interviewed regarding trails is positive. They enjoy using the trails for recreation and nature appreciation. The trails add to their sense of enjoyment in their experience of the West Side.

5.4.2 Buffers

On the West Side, there are several areas designated as Environmental Constraint Areas Level 1 - the most sensitive lands on which the Laurel Creek Watershed Study recommends no development. Such areas include high quality ecological systems such as wetlands, woodlands, naturalized vegetated buffer areas, and perennial watercourse reaches. Many of these areas are immediately adjacent to residential development. Subwatershed plans have resulted in the creation of naturalized buffer zones between environmental features. Buffers are a significant feature of the West Side development. Along intermittent creeks the buffers

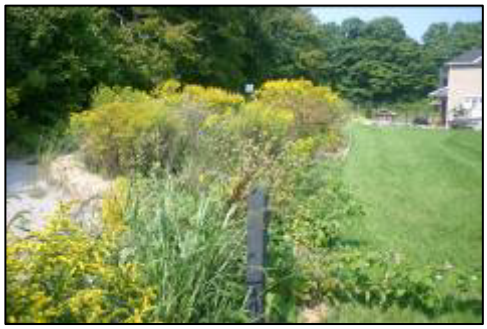
measure a minimum of 15 meters from the top of bank. In perennial reaches the buffers measure a minimum of 30 meters. All woodlands, wetlands and hedgerows experience a minimum of 7- 30 meters as the buffer. These buffers are naturalized having been planted with native tree and shrub species during the subdivision development phase. The goal is to connect environmental features to create a continuous greenspace system to facilitate migratory movement of wildlife and dispersal of vegetation. This green infrastructure on the West Side was the first of its kind in Waterloo. For residents it would most likely be an unfamiliar neighbourhood feature.

Whereas interviewed residents were generally positive about their trail experience they were much more negative about the buffers. In the following quote the reference by the informant to the vegetated strip is actually a buffer between their backyard and the forest. Additionally there is a trail entrance beside their home which includes a naturalized area as well.

> We are really impressed with the maintenance of the trail. The mulch that is placed on the trail is just fabulous, it's clean, it just feels good on your feet when you are hiking back there and that is really impressive. The biggest thing is the City, when they planned it, they should have also put a buffer zone between the weeds and the home properties. The biggest thing that I fight with and my neighbours fight with...the forest is creeping in, we are constantly trying to keep our garden non infested with weeds and they are healthy weeds, huge powerful weeds that make their ways under rocks and fences and you are always fighting the battle. But we knew that when we moved here. And also we don't like the mix that the City put in at the side of the house. Apparently they paid a fortune for this weed mix at the side of the house and quite frankly it looks like hell and everyone comments on how ugly it looks. There is nothing we can do about it because it is the City's little strip. I have seen it done so much more nicely in other communities, it's like they dumped a whole bunch of thorn bush seeds and watched it take off, it is ugly. They went on and on about how it cost $5000 and we were so excited when we first moved in and then as time went on I couldn't believe how bad it looked. The biggest thing is that the City or the people who put the vegetation in they were looking at keeping it natural. There is looking natural, low maintenance, that no one has to do anything and everything will just grown normally and then there is looking natural,

> wild look to it and that is the only thing about the park entrance that I have a dislike to is that wild unkempt. Tall grasses would have been so much nicer, fewer thorn bushes, yes they are thistles, I am sure I am allergic to most of it, there has to be ragweed out there I don't know. But we are really impressed with the maintenance of the trail. (06)

One particularly unique feature of these buffers that was discussed by residents is the vegetation. Of greatest interest to residents is the portion of buffer between their rear property line and that of the trail. These buffers are indeed a stark contrast to the mostly manicured backyards of adjacent residents (see photo).



Contrast between manicured and naturalized

One liability to living beside the buffers is that the vegetation may readily spread to adjacent properties and beyond. It is important to note that the property line between public and private lands is delineated solely by demarcation posts. Instead of a structural fence the West Side development utilizes the concept called a "living fence". This "living fence" is incorporated into the buffers; it consists of planted vegetation in a more or less straight line behind the homes immediately adjacent to the trail.

Another resident who also lives adjacent to the trail and who does not tolerate the buffer well speaks to actions her family has taken to tame it. Incidentally the resident also describes ragweed as being in the buffer whereas it was actually goldenrod she was referring to.

> My husband went out to mow the lawn on Sunday and it really needed to be done and he was taking forever – so I looked out the window and there he was - with his weed eater mowing down the area before the trees where all the ragweed is. We both have pretty bad allergies and I think he was trying to do a good thing not a bad thing and he pulled out his weed wacker and started whacking them down…and another thing was we have noticed raspberries and we have eaten some of them – and he said he wanted to get rid of some of those

> weeds in order to give the berries a chance to really thrive- well I guess he took it upon himself to do that this weekend.(08) (see photo)

An example of a mowed down buffer area

Another resident echoes a similar sentiment:

> Yes there are better things that could be growing there – things that don't cause allergies, things that aren't so overpowering. We bought the house and what we like about the house is the forest behind it, OK, I didn't buy a field of weeds, if I had wanted that there are other places that I could have lived. So it gets just so large…it all comes back too unsightly- I don't find it an attractive part of living where I live and given the choice I would remove it and put something else in its place that could be natural and could be indigenous certainly and fulfils all of the same things without having the other set of baggage attached to it. (08)

By contrast one resident who lives quite a distance from the buffer expresses a very different attitude, one of accepting the buffer vegetation and the inevitable spread of the species to private property.

> We hand pick them…it's just a fight against the weeds and we're not going to win…I just accept them because I know how invasive they are and I don't need the golfing green lawn like some people. (01)

It became quite clear while interviewing residents that it is the type of vegetation that is growing in the buffers that residents (especially those living adjacent to the buffer) dislike. The issue is mainly two-fold. The vegetation is more "wild" looking than residents would like to see immediately adjacent to their properties and they mistake goldenrod for ragweed. Beyond an extensive effort to plant vegetation in the buffer areas in the form of a living fence, there exists a dominating presence of goldenrod throughout much of the buffer areas. It is a widely held belief that goldenrod causes allergies. One resident while pointing to a stand of goldenrod remarked: "I

View of buffer with goldenrod from trail

believe that's goldenrod is it not? I think that causes my allergies" (07). It seems to be a simple, direct and obvious relationship to residents. "There is lots of it there in the back and at the side that is why the doors are all closed. And that's why there is all that medication around the house" (04). The truth is that both goldenrod and ragweed flower at the same time of year (August-September) and goldenrod has a large showy yellow flower which dominates the buffer at this time of year. It is ragweed however that is to blame for aggravating hay fever symptoms.

There is desire on the residents' part to improve the existing vegetation and make the area more appealing. One resident who has a background in restoration work suggests there might indeed be other vegetation that could be planted and be more greatly appreciated by residents.

> Yes, one of the ways around that is to put more of a shrub type layer in there almost have a nursery approach to where you planted stuff. So you could put in some of the dogwoods and viburnums most people would tend to prefer something like that. It isn't attracting wasps or causing allergies at least that is the perception we know otherwise and it would look more innocuous and it tends to be more of a horticultural list species. As a result to so some of those it can be useful -- if they want flowers for example. Sometimes what I do is put in native spireas that is more of a shrubby type of a plant, it tends to be a little more horticultural looking so people like it better and it isn't golden rod...One of things we saw was yellow touch me nots – most people like that and it does out compete a lot of plant material especially weeds and it looks horticultural. Early on in the season you will wind up with some weeds you would also look at doing something like putting in ground juniper for example that would take care of a lot of the weeds. (05)

Many of those interviewed clearly do not appreciate the buffers. There needs to be a way to utilize the protective nature of a buffer while also appealing to the residents, particularly those living adjacent to them. It will be an ongoing battle for resource managers and residents unless more showy and less invasive species are utilized coupled with teaching residents that goldenrod does not cause allergies.

5.4.3 Storm Water Management Ponds

Storm water management ponds are actual facilities that manage storm water runoff. There are two types of ponds in Waterloo – dry and wet ponds. Wet ponds house water year round. It is this type of pond that residents experience on the West Side. Three main topics evolved from the discussions with residents about these ponds – the wildlife, vegetation and recreational opportunities.

When asked about the pond near their home, residents described a relatively appealing vista but there were some differing opinions about the wildlife the ponds tend to house. "All I know is that I love it [the pond], it provides a beautiful view. It's great for the Canada Geese" (18). A difference in opinion is obvious by what another interviewee shares about the geese:

> Get rid of the geese because without a doubt they are the filthiest beasts in our habitat I think and having children playing around it [excrement] just drives me crazy…They don't bother us directly but they go right up on the lawns and shit all over them. (19)

Beyond the geese another resident speaks of other species he has observed at the storm water management ponds.

> Great blue herons are down here when you walk through the SWM pond, I saw indigo buntings over on the West side you don't see them in town and other kinds of wildlife like that. We don't need them in the backyard eating our shrubs but they do come around. Lots and lots of rabbits, lot of frogs all over the place. (02)

One aspect of storm water management ponds that is significantly different from other naturalized areas is that such facilities require regular maintenance by way of dredging. From an aesthetics point of view this can significantly alter the look of the pond during and for some time after the work activity. The following quote speaks favourably of the ponds and

the fact that the resident named the ponds with endearment tends to illustrate a connection to place as well.

> The pond is lovely and they did dredge it and I guess they have to dredge them every two years. [The vegetation has been] pretty steady other than the fact that they have planted it [the pond] to reinforce the banks, and they did that very quickly. They planted lilies and some other species that grows off the edge of the pond and put wire fence around it initially last year or the year before. They did the same at the next one down. We call this one gumbo pond and the one down there we call goose lagoon. The pond was beautiful and the city has done an excellent job I think, of landscaping it. Has it been the city or the landscapers who have done it? They have done a wonderful job. The planting has been successful. We see the far side which has done very well with both trees and shrubs but down on this side they have really done a fine job and it is really just burgeoning. (19).

A concern for managers is the recreational use of ponds. The lands immediately adjacent to storm water management ponds are planned to provide recreational amenities such as trails but the intent and management of the ponds themselves is for the sole purpose of managing runoff. Recreation activity directly in the ponds is not permitted. However, uses such as fishing and skating may indeed occur, as one interviewee describes.

> In the summer there was one family that waded in with a fishing rod. I don't think that they caught anything – they had young kids and they were having fun. Yes some of the parents come down and shovel and if the ice surface is worth the effort then on both ponds then they come down and play hockey and stuff. They have a lovely time actually… Oh they were gorgeous kids, kids just are so happy here and so many of them are immigrant kids and you know darn well that they haven't had a lot of freedom, in the past and they just love it! They just love it and it's a happy spot and it's just an ideal place to live. (19)

For residents it would appear that the functionality of ponds does not make a marked impact upon their lives, at least it is not something they highlighted in the interviews. This is important for managers to note because these factors are not integral components of the functionality of ponds, a factor upon which managers may tend to be more focused. Overall storm water management ponds appear to contribute to a sense of enjoyment for residents.

5.5.4 Forest

Perhaps the most significant feature on the West Side is the presence of Environmentally Significant Policy Area #19, Forested Hills. In creating the subdivisions there was every intention of protecting this feature. Many residents, those who live immediately adjacent to the forest and those who live elsewhere in the subdivisions, spoke of their positive impression of the presence of this feature. Those who selected lots immediately adjacent to the forest spoke of how the forest was an attractive feature to them and of their willingness to pay premiums to live beside the forest: "Absolutely it [the forest] was the selling point which is why I paid so much freakin' money for my house"(8) Others spoke of the monetary investment they made in selecting a home beside the forest.

> It [the premium paid] was high …$30,000 which seems a lot to me now but apparently it is almost double that much now 5 years later - we were in here just before the pricing went up on a lot of things. It is a decent size [lot] which is unusual for a city. (11)

Another resident describes a similar experience:

> Our first two houses were inside corner lots so we looked through people's backyards instead of their window and so this is the first time we have had the opportunity to have no one behind us. And apparently it is supposed to be protected so I don't expect any development behind us any time soon and so that was one of the appealing things that we really like. I could have paid $18 000 for really deep lot with a big hill going up to a really busy street and then paid additional costs for there to be a walk out so now do I go that route or do I pay a little bit more and get some trees. And it just worked out to pay a little more and get some trees. (06)

Residents also spoke of some of the challenges of managing their own properties when living beside nature. Being close to nature but not too close is the sentiment described by this resident.

> One of the reasons why we came out here is because [my husband] likes the woods. I didn't want to be right in the woods so we have both options here obviously. We do have a fair bit of woods but our

> house isn't sitting right in the middle of it. And we were also intrigued by the fact that it was a protected woodland or marshland or wetland and so on. (11)

Residents also spoke of the benefits of recreation and nature appreciation that having a forest in the neighbourhood provides.

> We pick raspberries and I make pies with the raspberries, just in the back of my woods. We go there and we watch the frogs. In the springtime you can hear them. I go for walks with my dog along this area and its funny because he is very naïve. One time there was a rabbit just offside the trail and the dog just looked at him and rabbit is just looking at him and he doesn't know what to do, so he just keeps walking by. We have bunny rabbits, we do have salamanders, my daughter saw a salamander while we walked the trails. So these are well used by the community. I always encounter other folks using the area. Like when I go on the trails there are always other folks there. It is something that is a working part of our area and it is very cool and I enjoy that because it is almost like a world away and yet it is so close. It is a total change in dynamic. The sad part of many subdivisions in a sense is the lack of greenspace. In new subdivisions there's no trees. So you crave big trees. Any tree over 5 feet is a big tree. So to go back there [to the forest] really feeds the senses, it really feeds the spirit. It reminds you that okay nature is here and I am a part of it. It re-establishes that connection. (03)

The forest seems to add to the sense of enjoyment residents experience. Residents became quite animated with enthusiasm when they described wildlife sightings from the forest. They also spoke highly of the contribution the forest makes to their quality of life as this quote illustrates.

> Finches yes, and we have seen blue ones, blue purpley colour just beautiful… Rabbits. A huge groundhog that lives under the tree and I know we are not supposed to feed him but once in a while you know we'll throw a carrot or lettuce for him and he eats it and he's huge! Hummingbirds. There is a family of crows right where you can see the leaves are changing there and the nest is just behind there. It is great when this past summer when we are sitting out here having parties and stuff and I actually watched these four crows and just the things they do. So that's cool. There is bats at night. There are about 2 or 3 of them and about 9 o'clock every night they do their thing. No deers or anything because I think we are just too close…We like being up here cause it feels like at some point when you sit on our deck it feels like

> you are in a tree fort because you can't see the ground at all, especially if you are on this side it just feels like you are in Robinson Caruso tree home or something and it's a really nice summer day and its just again its so relaxing and calming and it feels like you are not in Waterloo it feels like we're actually on a deserted island it's quite, quite nice. (04)

The forest is quite a positive aspect of the West Side experience. Residents very much enjoy the forest. It may very well be the highlight of the West Side experience.

5.6 Conclusion

These twenty interviews have provided an excellent foray into the lives of West Side residents. This may very well be the first exploration of West Side residents' interaction with and perspectives on the "as built" reality. These interviews complement the findings of the more quantitative data examined in the previous chapter. Some of the patterns and curiosities that arose from the quantitative data were further illuminated through this chapter. The two approaches (survey work and interviews) are excellent complement to one another. Unstructured interviews can be useful at providing this kind of foray into the lives of residents. Having come from mostly prior suburban locations, residents came seeking the comforts of suburban life with the added bonus of an abundance of greenspace. Residents seem almost surprised by the extent to which the greenspaces have contributed to their sense of enjoyment of the neighbourhood. Although residents are quite happy in their experience of the greenspaces, the interviews provide insight into the concerns and beliefs residents hold regarding buffer vegetation, stormwater management ponds, trails and wildlife. A greater understanding of how residents understand and perceive density as well as access or lack of access to facilities is better understood. Furthermore the interviews provide greater context as to the type of neighbouring that occurs on the West Side and highlights the role that life stage and culture may play. The findings of the twenty interviews provide a solid complement to the patterns illustrated by the quantitative data as opposed to illuminating any rather surprising

or contrasting patterns. The interviews do however provide depth, context and a broader understanding of life on the West Side of Waterloo.

CHAPTER 6- CONCLUSION

6.1 Summary of Purpose

The purpose of this research has been to explore the interface of the urban environment and natural areas. In particular the West Side of Waterloo with its 750 hectares of environmentally significant lands and three new urbanist themed subdivisions provided an excellent opportunity to explore this social laboratory. The vision and intentions behind the design of the three West Side subdivisions provided a strong context within which to explore a variety of research questions. The goal of this research was to better understand residents' experience of living on the West Side of Waterloo and has been quite successful in gaining an understanding of how residents interact with the greenways in a socio-cultural and ecological context. Aspects of human interaction and harm to the greenways by way of users and adjacent residents, has been documented. It is now possible to gauge resident perception, experience and understanding of subdivision design, neighbouring, sense of community and environmental land management. It has also been possible to identify the extent to which the vision for the West Side is being met. This research has helped to illuminate how residents experience life on the West Side. There is greater clarity with regards to urban form and how it may affect the daily lives of residents. To a great extent the exploration of the research questions have been supported by strong methodology. Complemented by participant observation and qualitative unstructured interviews many of the findings for the West Side have also been able to be compared to the greater K-W area. This concluding section will discuss the extent to which the vision for the West Side is being met followed by a discussion of future research opportunities and policy recommendations which have become apparent through this research effort.

6.2 Missing the Mark - The West Side Vision

The vision for the West Side was steeped in the principles and hopes of new urbanism. What has evolved in the "as built reality" is at best, a hybrid new urbanist development. Many may even challenge calling the development so much as a hybrid. It may by some be more aptly considered a mockery of new urbanism. The features consistent with new urbanism that have been incorporated into the design (such as front porches, short set backs, smaller lots, higher densities) have not made a comprehensive mark on the subdivisions. A realization of the new urban ideals deteriorated in implementation. This as Talen (2005) describes is possibly the worst of potential outcomes. The initial ideals of the West Side as a planned community have devolved into something far off the intentioned mark. While the urban ideals in the planners' minds and hearts may have persisted; in the "as built" reality those same ideals matured or evolved poorly. Talen (2005) would perhaps best describe it as a failure in the "structure of influence". For example developers turned their initial design plans away from mixed use at a fine grain and back alleys stating that the market would not support this kind of development. In essence Grant (2006) might describe what was implemented as simply a "cherry picking" of new urban features. In essence many of the social goals of new urbanism were wiped out under the weight of market success. While planners often see themselves as visionaries in this instance they were more likely enablers (Grant, 2006) – simply translating a different set of values onto the "as built reality" than was originally envisioned. The contribution the development makes to achieving community sustainability falls terribly short of the vision planners held and it falls away from the shift towards sustainability new urbanism could have supported. However while the planned communities of the West Side are not a realization of the complete set of goals they do provide a model of new urbanism in practice. The West Side Vision states:

> Against a backdrop of natural woodlands, attractively designed homes of various types rise up with the rolling topography. Smaller neighbourhood pockets are created by the landscape and the placement of built features including other uses and landscaping. Open spaces, pedestrian and cyclist opportunities are readily apparent and provide an obvious focus to higher density, higher rise mixed use centres which are visibly noticeable and feel within easy access. Streets are different – fewer cars, more people, and houses are closer to the street.

In terms of the backdrop of the West Side subdivisions, Environmentally Significant Policy Area #19, Forested Hills, is a feature welcome by West Side residents. These lands have an obvious presence in the community. Residents experience an improvement in their quality of life and sense of enjoyment vis à vis the forest and all the other passive greenspaces on the West Side. The protective buffers help to keep adjacent residents from encroaching into the forest but the trails provide a gateway for trail blazing. Human impact in these environmentally significant areas is real and has the potential to rapidly degrade the areas.

The West Side vision itself is weak in directly addressing the social goals of new urbanism including social inclusion and social interaction which could support the development of a sense of belonging. If, to any extent, the West Side vision speaks to the social goals of new urbanism it is in the creation of smaller neighbourhood pockets of homes of different types. The vision might be said to infer that in smaller neighbourhood pockets, with diversity in the housing stock and attention to the placement of other built features, a vision for community with a sense of belonging is born. Planners undoubtedly envisioned creating a livable place where residents would interact and feel a sense of belonging. Residents mentioned in both the survey work and interviews that the lack of community recreation facility and social gathering place is missed. Excluding this type of feature may have ultimately hindered the sense of belonging residents experience on the West Side of Waterloo. Its absence is not just a failing of the Vision but perhaps of the centralized model the City of Waterloo has traditionally

adhered to in planning its recreation facilities city-wide. Including this type of use at a finer grain within the city could help to create a more livable place.

The West Side is a livable place in several other ways however particularly apropos of the greenways. The more greenspaces appeal to residents the greater their sense of belonging. Additionally the placement of other built features has also helped. The attention to creating a vertical enclosure by shortening setbacks and including sidewalks and narrower roadways is facilitating neighbourhood walkability. The more walkable residents perceive their neighbourhood the stronger their sense of belonging. This is a positive step towards sustainability.

The greatest obstacle to creating a livable place on the West Side is undoubtedly the persistence of auto dependency. Although pedestrian and cyclist opportunities are readily apparent, amenities are perceived to be within easy access only by car. The Vision had aspired for much more than it has been able to achieve in the "as built" reality in this regard. Fewer cars within the community has not materialized and most likely will not as the infrastructure (amenities, transit and trails) as well as personal preference, cultural and societal norms do not readily support meeting daily needs (such as getting to work or to the grocery store) without the car.

As in the Beechwood example and the work done by Martin (2001), he concluded that the greenways did not provide a significant contribution to community sustainability as there was no less reliance on the automobile and the greenways acted more as a barrier than a boon to neighbours knowing each other. This thesis research further informs the work of Martin (2001). Greenways on the West Side are more contiguous and therefore may not be as much

of a barrier to neighbouring and a sense of community but the West Side greenways do not provide significant relief from auto dependency as the trails do not support destinational travel to amenities. Instead as in the Beechwood example, residents are driving by car to amenities and activities outside of their subdivisions. This thesis adds another chapter to the Waterloo West Side progressive urban development movement spanning four decades and serves as a final chapter on the earlier review provided by Martin.

Overall the West Side vision is minimally achieved. To begin building a community at the fringe of an existing city poses many challenges to achieving greater levels of community sustainability. New urbanism holds much promise but continuing to build upon greenfield development is quite unsustainable. By and large residents are very satisfied with their West Side experience. The profession of planning does not hold exclusive rights to the key to achieving greater levels of community sustainability. Until normative beliefs and cultural practices significantly shift towards embracing more sustainable lifestyles, communities like the West Side will continue to be built, residents will flock to them and managers will struggle to manage the impacts upon the environment. Planning and visioning play an important role in creating community sustainability but everyone has a role to play in the paradigm shift that is truly required.

6.3 Research Implications and Future Directions

This research illuminates many issues related to planning. As a result there are several research implications that are identified. This section will identify research ideas and suggest future directions for the study and practice of planning.

6.3.1 The Evolving Social Laboratory

- This research was conducted approximately one decade after the arrival of the subdivisions on the West Side of Waterloo. Replicating this research in the next decade will be useful to monitor the change in this social laboratory. At such a time it may also be possible to include the next subdivisions on the West Side of Forested Hills ESPA #19 that are yet to be developed. Perhaps including similar research in a traditional neighbourhood in Waterloo would provide a greater level of comparison in addition to survey work in the K-W area study as well.

6.3.2 Application to Future Development

- There are plans of subdivisions for the west side of Forested Hills ESPA #19 which are currently before the Ontario Municipal Board[5]. The results of this research are very much applicable to and useful for the purposes of guiding this future development on the West Side and in providing further refinement to the social laboratory to be evaluated in the future. If any greater level of sustainability is to be achieved in the next subdivisions it must be more than a hybrid new urbanist community. However, the mere fact that the subdivisions are also located at the fringe of Waterloo presents the obvious challenge to meeting any of the promised goals of new urbanism.

- The success of this research may inspire the further study of the urban interface elsewhere. Communities in other parts where greenways are now being established in urban areas may well glean benefit from this research adapting it to their own respective areas.

[5] There are three subdivisions which have been extensively reviewed for environmental impacts and designed accordingly. These proposed subdivisions have been stringently assessed by both the Regional Municipality of Waterloo and the City of Waterloo. These appear to have a good likelihood of winning OMB approval. If so, these three subdivisions will be the next stages of advanced planned communities.

- Development into greenfields is still occurring and it will most likely continue until little opportunity exists at the fringe. Nonetheless the density targets for Waterloo Region and elsewhere in the Greater Golden Horseshoe (GGH) have been set by the Province of Ontario, Ministry of Energy and Infrastructure. It may be important to provide access to greenspace to help mitigate the negative perceptions or experience of increased neighbourhood densities. Municipalities would do well to include buffers in their greenfield development to help mitigate the edge effect adjacent residents in particular inadvertently create. It may be useful to research exactly how effective buffers are in actually mitigating those impacts. For as much as this research explores resident attitudes towards greenways it did not assess the effectiveness of this environmental management technique.

- In this research the most often cited complaint about the buffer areas was the weedy species they house. It would be useful to explore seed mixes/planting combinations for buffers and storm water management ponds for effects on ecology and resident perception to find combinations that contribute most positively to the ecology of the area while also more greatly appealing to residents than the current practice. It may be that more showy species with flowers and berries that have flowering times dispersed throughout the year which could also provide winter interest may be especially valuable to residents.

6.3.3 Building Community Sustainability and Ensuring Ecological Sustainability

- It may become increasingly more important to harness the energy and capabilities of residents in neighbourhood associations to help build a sense of belonging and deliver programming to the greater community. If so, it will become more important to explore effective means by which the community capacity of neighbourhood associations can be

built, so that they may become a more effective vehicle to deliver supportive community initiatives such as recreation programming.

- The City of Waterloo is contributing to a lack of community sustainability by utilizing a centralization of recreational facilities. In fact it is the case that by subscribing to such a model the City itself is helping to contradict its own vision for the West Side communities. Exploring the model of decentralized community centres or neighbourhood community centres as related to sense of community within the City of Waterloo is therefore important. At the time of this research the City of Waterloo subscribed to a centralization of community recreation facilities – with facilities located in the Uptown and East Side of Waterloo. The City of Kitchener by comparison has a more decentralized model of community centres – with a community centre in virtually every neighbourhood. Because West Side residents do not have immediate access to recreational facilities in their neighbourhood, exploring opportunities for parkettes to more greatly contribute to a sense of community and meeting the recreational needs of its residents may be useful. So too might the exploration of how to design and manage parkettes to appeal to a wider age group thereby the parkette feature may have greater longevity and may better meet the need for recreation immediately within the neighbourhood.

- A recently planned infill development in Waterloo "the42" (located at 42 Bridgeport Road East) has partnered with a local car cooperative Grand River Car Share in order that they may reduce parking load and support less car dependency in their developments. The loft project is a collaborative effort between Toronto's Quadrangle Architects and Waterloo's local Moment Developments and Scribblers' Club. The goal of this project is that it creates not only a building but form and function that enhance the urban environment.

Conducting a market analysis of the potential to expand car share/car cooperatives into the urban fringe developments of Waterloo may prove useful. For instance having lands within a subdivision from the outset designated for car cooperative vehicles to park in may provide residents with accessibility to an automobile without the need for ownership. This could help to shift auto dependency within such communities. Furthermore there are planned efforts to expand the current Grand River Car Share program and market membership to younger drivers. Promoting these types of opportunities to West Side and other suburban residents within the Region of Waterloo is useful to reduce the number of cars in these types of subdivisions. Furthermore it would be useful to identify opportunities to utilize community based social marketing and direct marketing of public transportation opportunities and other transportation opportunities within the community that support a modal shift towards more sustainable means of travel and away from the singly occupied motorized vehicle. Identifying and removing barriers for residents is imperative for there to be a reduction in auto dependency.

- Further exploration regarding attitudes towards smaller lots, higher densities and to what extent potential buyers are willing to make tradeoffs because of access to other amenities such as greenspaces is vital. Marketing higher densities, and other features characteristic of new urban design guidelines is imperative for a shift to occur (or continue to occur) in the marketplace away from the single detached home on large lots to more sustainable forms.

6.4 Shortcomings/Limitations of the Research

The research conducted for the most part has a very solid framework. It is comprised of a multi-method approach which includes fieldwork (observation and unstructured interviews) and surveys of West Side residents and of the K-W area. There are two main areas whereby

improvement could have provided a greater level of comparison regarding the data that was collected. Firstly there were very different response rates between the two surveys that were conducted. There was a poor response rate in the KWAS and a good response rate for the West Side survey. Improving attention to the design and implementation of the KWAS would alleviate this weakness in the future. In turn, the low response rate for the KWAS may limit the comparability to the West Side data, particularly the generalizability of the data. For instance better comparison for the residency tenure between the two surveys may have been possible if the response rate was higher for the KW Area Survey.

Secondly, it would have been beneficial to include a traditional neighbourhood such as Uptown Waterloo as a control group for an additional level of comparison to the data collected from the West Side of Waterloo. Such an additional level of comparison would be useful for instance in further exploring such concepts as neighbourhood walkability and auto dependency. An Uptown Waterloo study location would provide a study site that has traditional urban features such as a grid pattern, vertical enclosure and amenities within easy access. This was initially considered as part of the research design but it was ultimately dropped as being to expensive and time consuming in consideration of what was already an ambitious, multi-faceted research plan. Comparing a traditional neighbourhood to a (hybrid) new urban neighbourhood could provide further useful insight into residents' normative practices and beliefs surrounding these issues as well as others.

6.5 Policy Implications

There are several policy implications related to this research. The study relates very well to current policy directions guided by the Province of Ontario and thereby also the Waterloo Region and its local municipalities. Specifically in the Provincial Policy Statement (PPS) of

March 1, 2005 there is recognition that there are complex inter-relationships among economic, environmental and social factors in planning. Policies within the PPS speak to efficient use and management of land and infrastructure, protection of the environment and resources, and ensuring appropriate opportunities for employment and residential development, including a mix of uses. What is significant about this research is that while it was being conducted, the Province of Ontario formally provided, through policy, greater clarity on many of the issues explored by this research. This research effort will in turn conclude with the forgoing discussion on policy implications as well as new policy areas that various bodies may do well to consider.

This research is illustrative of the resultant challenges of making headway towards sustainability in greenfield developments. Residents that self select to live in such communities have found most of what they are looking for on the West Side. Until significant paradigm shifts occur within the social norms and belief patterns of the predominant culture, such developments will suffice. Perhaps the most obvious shortfall of the West Side Vision is the persistence of auto dependency. In order to reduce such dependency there must be greater emphasis on creating transit supportive communities. Such development is compact, consists of mixed uses, high levels of employment and residential densities, possesses a grid network, is pedestrian friendly, has reduced setbacks, with parking at the side and rear of buildings, and has improved access between arterial and interior blocks in residential areas. The Growth Plan for the Greater Golden Horseshoe (GGH) approved under the Places to Grow Act (2005) aims to direct intensification to settlement areas that can accommodate and service new growth. It does provide intensification targets to be used in planning growth within the Greater Golden Horseshoe (GGH) of which Waterloo Region is a part. It does verify and delineate a built boundary within Waterloo. By 2015 a minimum of 40% of all residential

developments within Waterloo according to the Act will be located in built up areas. The GGH Growth Plan supports increasing the modal share for transit, walking and cycling by encouraging development that will create complete communities with a diverse mix of land uses, a range and mix of employment and housing types, quality public open space and easy access to stores and housing. The City of Waterloo is currently updating its Official Plan and in so doing, providing a more comprehensive document outlining these considerations to help steer development in a more sustainable direction. As well municipalities will do well to create new urban guidelines that speak to the built form that is more supportive of sustainability.

This research illustrates that sprawl is not likely to support efforts towards sustainability in a significant way. Priority in development needs to shift towards infill as opposed to greenfield development at the fringe of communities. Developing a hard line to protect natural areas from further urban development is a fundamentally important step towards greater levels of sustainability. The research findings from this tend to support the Ontario Ministry of Municipal Affairs and Housing's Greenbelt Plan (2005) which supports natural systems by designating a Protected Countryside. Although Waterloo Region is just West of the Greenbelt Plan Area, the Regional Municipality of Waterloo has developed a Countryside line in the Northwest Corner of Waterloo through its Regional Growth Management Strategy. Such efforts support reurbanization and managing growth to support the quality of life of residents and greater levels of sustainability.

This research explores human interaction with greenways. It raises the level of awareness and understanding about human use and impact upon greenways. The findings are significant to natural resource managers particularly those managing the urban interface. The Greenbelt Plan indicates that although certain areas are to form a Protected Countryside these same areas

are to provide a full range of publicly accessible, built, natural settings for recreation. This research is useful in providing managers with a greater understanding of human interaction within greenways and highlights areas that management plans need to address. Such areas include the more social-cultural issues and normative belief structures of residents that often fall off the radar of the more bio-physical considerations in environmental management plans. Human impacts off trail for example are going to occur and managers need to consider how they will manage these types of impacts, but perhaps more importantly planners need to consider how human impacts can be mitigated or avoided all together. Perhaps some greenspaces need to be less readily accessible to the public. Current Provincial Policy seems to lack emphasis in this area altogether.

In existing greenfield developments, particularly that of the West Side of Waterloo, the automobile is most likely here to stay. The City of Waterloo would do well to include support for car cooperatives such as Grand River Car Share. In this way cooperatives could expand their not for profit services to the edge of municipalities to provide residents access to vehicles without having to own a car or a second car. This would be particularly useful to families as their children reach the legal driving age. It may also assist in reducing the issues related to parking while still providing a level of freedom that comes with access to a car. Furthermore, the Region of Waterloo would do well to directly market transit services to West Side residents and in other suburban residential communities where new transit services are going to be provided or expanded.

It is also important to include in subdivision agreements the timing of implementation of such features such as trails and designation of transit routes. Those features which are determined, laid down or clearly laid out very early in the development process help potential buyers have a better understanding of what the future neighbourhood will look like. This will help

residents have a better understanding of what they are buying into and reduce concerns, complaints and opposition later on.

Relatively new green technologies such as buffers are a significant feature of the West Side. These features were determined and laid out well before the lands were prepared for development. Section 3 of the Greenbelt Act makes provisions for vegetated protection zones. Municipal Official Plans should contain policies that make provisions for such infrastructure; such is the case in Waterloo. Currently however such provisions are only specified within the Laurel Creek Watershed, it may well be wise to include all of the Grand River Watershed.

6.6 Final Words

The intent of the West Side Vision is still very much the sentiment that planners envision for the future of Waterloo. There is perhaps a refinement in the vision, with new parameters that have since been introduced by the Province of Ontario. A greater level of sustainability is attainable, but not without some significant changes to the typical suburban model and cultural norms. No matter the form of development buyers will self select to live in any development that relatively meets the perceived needs of the individuals at the time. New urbanism alone is not a panacea and implementing its principles and practices is not always readily possible as there are many factors that influence development. Greenfields are still providing development lands within Waterloo and until the Countryside line is reached, greenfields will continue to be built upon. Consequently the urban interface will continue to challenge resource managers for their time and skill. The profession of planning itself cannot change the socio-cultural norms the public holds dear. Municipalities can insist on more sustainable development patterns even at the fringe of Waterloo. For instance the

municipality could insist on a mixed compact use at a finer grain to create a more sustainable, livable built environment. However, the relationship between the development industry and the municipality appears, or is depicted, as being a somewhat delicate one. Too much push from the municipality could come to shove from the development industry resulting in the breakdown of good relations between the municipality and the development industry. Furthermore, developers believe they know their current markets well and the needs of their clientele, and therefore may not necessarily be agents of change within the marketplace. In reality all those involved in development must accept a heightened sense of responsibility in this regard as motivators that guide development towards greater levels of sustainability.

It is hoped that this research begins to illuminate the social laboratory found at the urban interface - that the more social-cultural factors found within the urban interface are better understood. It is in understanding these factors that they can be better predicted and managed. It is with keen attention at the urban interface that provisions for sustainability may be better understood and a greater level of sustainability ultimately achieved.

References

Ahern, J. (1995). Greenways as a Planning Strategy. *Landscape and Urban Planning, 33*, 131-155.

Babbie, E. (1983). *The Practice ofSsocial Research* (Fifth ed.). Belmont, California: Wadsworth Publishing Company.

Beatley, T. (1995). Planning and Sustainability: The elements of a new (improved) paradigm. *Journal of Planning Literature, 9*(4), 383-395.

Berke, P., MacDonald, J., White, N., Homes, M., Line, D., Oury, K., et al. (2003). Greening development to protect watersheds. does new urbanism make a difference? *Journal of the American Planning Association, 69*(4), 397-413.

Berke, P. R. (2002). Does sustainable development offer a new direction for planning? Challenges for the twenty-first century. *Journal of Planning Literature, 17*(1), 21-36.

Bohl, C. C. (1999). *Traditional urbanism reconsidered: Traditional urbanism, new urbanism and urban livability at the fin de siecle. introduction to the Spring 1999 Charles and Shirley Weiss urban livability symposium [on-line].* Retrieved July 5, 2006, from www.unc.edu/dept/dcrped/events/weiss.html

Brain, D. (2005). From good neighbourhoods to sustainable cities: Social science and the social agenda of the new urbanism. *International Regional Science Review, 28*(2), 217-238.

Brown, B., & Cropper, V. (2001). New urban and standard suburban subdivisions: Evaluating psychological and social goals. *American Planning Association, 67*(4), 402-420.

Carliner, M. (1999). Comment on Karen A. Danielsen, Robert E. Lang, and William Fulton's "Retracting suburbia: Smart growth and the future of housing". *Housing Policy Debate, 10*(2), 549-553.

City of Waterloo. (1994). *Official Plan of the City of Waterloo, Office Consolidation*

City of Waterloo. (1996). *Response paper for the Columbia Hills District Implementation Plan* No. DS96-83)

City of Waterloo. (1997). *Response paper for the Clair Hills District Implementation Plan.* No. DS-97-46)

City of Waterloo. (1999). *Draft plan of subdivision 30T-9020 and zone change application Z-98-02 868361 Ontario Ltd. (Activa) (former Doerner Lands).* No. DS99-46)

City of Waterloo. (1999). *Zone change 99-05 and redline revision to draft plan of subdivision 30T-97018 Clair Hills developments Rheinland Place.* No. DS99-40)

City of Waterloo. (2000). *Draft plan of subdivision 30T-97021 and zone change application Z-98-04 Activa holdings inc.* No. DS-00-06)

City of Waterloo. (2002). *Zone change application Z-98-03 and draft plan of subdivision 30T-97022 Activa Holdings* No. DS-00-06)

City of Waterloo. (2002). *Zone change application Z-98-03 and draft plan of subdivision 30T-97022 Activa Holdings* No. DS-02-10)

City of Waterloo. (2004). *West Side open house. panels 1-15.* Unpublished material.

City of Waterloo. (1997). *Draft plan of subdivision 30T-97002 and zone change application Z-96-16 Erbsville Road* No. DS97-24)

City of Waterloo. (1998). *Draft plan of subdivision 30T-97016 and zone change application Z-97-16 C. Kahlen Erbsville Road* No. DS98-29)

City of Waterloo. (1999). *Draft plan of subdivision 30T-97017 and zone change application Z-97-18 Erbsville Road development inc. 913797 Ontario Inc., the City of Waterloo* No. DS99-69)

City of Waterloo. (2004). *Laurel Creek Watershed Monitoring Program, Progress Report 2004*

Cotter, J. (2005). *Development Planner, City of Waterloo*

Crane, R. (1996). Cars and drivers in the new suburbs. *Journal of the American Planning Association, 62*(1), 51-66.

Dillman, D. A. (2000). *Mail and internet surveys: The tailored design method* (Second ed.) Wiley.

Duany, A. E., Plater-Zyberk, E., & Speck, J. (2000). *Suburban nation, the rise of sprawl and the decline of the american dream*. New York: North Point Press.

Fabos, J. (1995). Introduction and overview: The greenways movement, uses and potentials of greenways. *Landscape and Urban Planning, 33*, 1-13.

Fabos, J., & Ryan, R. (2004). International greenway planning: An introduction. *Landscape and Urban Planning, 68*, 143-146.

Frank, L., & Engelke, P. O. (2001). The built environment and human activity patterns: Exploring the impacts of urban form on public health. *Journal of Planning Literature, 16*(2), 202-218.

Gobster, P. H., & Westphal, L. M. (2004). The human dimensions of urban greenways: Planning for recreation and related experiences. *Landscape and Urban Planning, 68*(1-2), 147-165.

Grand River Conservation Authority. (1993). *Laurel creek watershed study final report*

Grant, J. (2006). *Planning the Good Community New Urbanism in Theory and Practice*. New York: Routledge Taylor & Francis Group.

Grant, J. (2002). Mixed use in theory and practice: Canadian experience with implementing a planning principle. *Journal of the American Planning Association, 68*(1), 71-85.

Handy, S. (1996). Urban form and pedestrian choice: Study of austin neighbourhoods. *Transportation Research Record, 1552*, 135-144.

Kaplan, R., Austin, M., & Kaplan, S. (2004). Open space communities: Resident perceptions, nature benefits and problems with terminology. *American Planning Association, 70*(3), 300-313.

Kearney, A., & Bradley, G. (1998). Human dimensions of forest management: An empirical study of stakeholder perspective. *Urban Ecosystems, 2*, 5-16.

Krizek, K. (2000). Pre-test posttest strategy for researching neighbourhood-scale urban form and travel behaviour. *Transportation Research Record, 1722*, 48-55.

Little, C. E. (1990). *Greenways for America*. Baltimore: John Hopkins University Press.

Lund, H. (2003). Testing the claims of new urbanism local access, pedestrian travel, and neighbouring behaviors. *Journal of the American Planning Association, 69*(4), 414-429.

Martin, L. (2001). *Residential greenways in transition: Four decades of experience in Waterloo. Canadian Mortgage and Housing Corporation.*

McGoldrick, D. (2008). *Environmental Project Manager, Water Resources, City of Waterloo*. Canadian Mortgage and Housing Corporation.

Mohamed, R. (2006). The economics of conservation subdivisions price premiums, improvement costs, and absorption rates. *Urban Affairs Review, 41*(3), 376-399.

Motkaluk, S. (1997). *The Laurel Creek Watershed Monitoring Program.*

Nasar, J. (2003). Does neotraditional development build community? *Journal of Planning Education and Research, 23*, 38-68.

Neuman, M. (2005). The compact city fallacy. *The Journal of Planning Education and Research, 23*, 11-26.

Ontario Ministry of Energy and Infrastructure. (2006). *Places to grow - growth plan for the Greater Golden Horseshoe*

Ontario Ministry of Municipal Affairs and Housing. (2005). *Greenbelt Plan*

Ontario Ministry of Municipal Affairs and Housing. (2005). *Provincial Policy Statement*

Region of Waterloo. (1995). *Regional Official Plan Policy*

Ryan, K. L. (Ed.). (1993). *Trails for the twenty-first century*. Washington: Island Press.

Searns, M. R. (33). The evolution of greenways as an adaptive urban landscape form. *Landscape and Urban Planning,* (65), 80.

Siegel, P. Z., Brackbill, R. M., & Heath, G. W. (1995). The epidemiology of walking for exercise: Implications for promoting activity for sedentary groups. *American Journal of Public Health, 85*, 706-710.

Talen, E. (1999). Sense of community and neighbourhood form: An assessment of the social doctrine of new urbanism. *Urban Studies, 368*, 1361-1379.

Talen, E. (2001). Traditional urbanism meets residential affluence: An analysis of the variability of suburban preference. *Journal of the American Planning Association, 67*(2), 199-216.

Talen, E. (2005). *New urbanism and American planning, the conflict of cultures*. New York: Routledge.

Talen, E. (2006). Design that enables diversity: The complications of a planning ideal. *Journal of Planning Literature, 20*(3), 233-249.

Taylor, J., Paine, C., & FitzGibbon, J. (1995). From greenbelt to greenways: Four Canadian case studies. *Landscape and Urban Planning, 33*, 47-64.

Walmsley, A. (2006). Greenways: Multiplying and diversifying in the 21st century. *Landscape and Urban Planning, 76*, 252-290.

Warriner, K., Goyder, J., Gjersten, H., Hohner, P., & McSpurren, K. (2008). Charities, no; lotteries, no; cash, yes: Main effects and interactions in a Canadian incentives experiment. *International Journal of Public Opinion Research, 20*(4), 517-527.

APPENDIX A – Waterloo West Side Survey

Waterloo West Side Survey

University of Waterloo

2006

In this questionnaire we would like to ask about living on the west side of Waterloo. The questionnaire should be filled out by the person in the house who feels most qualified to answer questions about the home and neighbourhood. However, feel free to consult with other household members on any question and decide together how to respond.

Part A: Your home.

This first section asks about how you came to live in this neighbourhood.

1. How long is it that you have lived in this neighbourhood? (Please give number of years lived in the neighbourhood or the year you moved into the neighbourhood).

Years lived in neighbourhood: _____ OR Year moved to neighbourhood:_____

☐ Check here if less than one year.

2. Do you own or rent this home?

_____ Own _____Rent

3. Approximately how many square feet is your home?
   - ☐ less than 1,000 sq. ft.
   - ☐ 1,000 – 1,999 sq. ft.
   - ☐ 2,000 – 2,999 sq. ft.
   - ☐ 3,000 – 3,999 sq. ft.
   - ☐ 4,000 – 4,999 sq. ft.
   - ☐ more than 5,000 sq. ft.
   - ☐ Don't know

4. What is the approximate current value of this home in Canadian dollars?

$_____

5. Which of the following terms best describes this house?
   - ☐ Single detached house
   - ☐ Condominium
   - ☐ Semi-detached house
   - ☐ Townhouse

6. Does the house have a garage?
   - ☐ No (Please go to question #7)
   - ☐ Yes→ If YES →Is this a: ☐ Single ☐ Double ☐ Triple

7. What describes the driveway?
   - ☐ Unpaved
   - ☐ Asphalt
   - ☐ Concrete
   - ☐ Interlock

8. Are you the first owner of this home?
   - ☐ Yes ☐ No

9. Please describe any additions or improvements made to the house, either by you or a previous owner. (Please check all that apply)
   - ☐ Outdoor deck
   - ☐ Patio
   - ☐ Outdoor hot tub
   - ☐ Outdoor clothesline
   - ☐ Vegetable garden
   - ☐ Paths or walkways
   - ☐ Extended driveway
   - ☐ Rain Barrel(s)
   - ☐ Composter(s)
   - ☐ Swimming Pool → Is it ☐ Above ground? ☐ In ground?
   - ☐ Fence → Is it ☐ Along the back? ☐ Along the side?

These questions ask about your previous residence.

10. Which of the following best describes the area you <u>previously</u> lived in, that is just prior to moving to this home?
    - ☐ An **inner city** or downtown area (built before 1945)
    - ☐ An **older inner suburb** of a city (built between 1945 and 1970)
    - ☐ A **newer suburb** of a city (built between 1971 and 1995)
    - ☐ A **brand new suburban development** on the fringe of a city
    - ☐ A small or medium **town**
    - ☐ A large **lot in the country**
    - ☐ A **farm**

11. Approximately how far in kilometres is your current home from the one you previously lived in?
    - ☐ Less than 1 km (less than 0.6 mile)
    - ☐ 1 to 10 km (0.6 to 6 miles)
    - ☐ 11-50 km (7 to 31 miles)
    - ☐ 51-100 km (32 to 62 miles)
    - ☐ 101 to 500 km (63-312 miles)
    - ☐ more than 500 km (more than 313 miles)

How did you come to choose your current home?

12. In terms of the home in which you are now living, what was important in your decision to choose this home? We realize many factors may have played a role, so for each of the home features listed below, please indicate if it was important or unimportant with respect to your decision to choose this home.

	Very Important	*Somewhat Important*	*Somewhat Unimportant*	*Very Unimportant*
Dwelling features				
a) Size of home	☐	☐	☐	☐
b) Type of home (e.g., condo, townhouse, single detached, etc.)	☐	☐	☐	☐
c) Floor plan	☐	☐	☐	☐
d) Exterior design/ Appearance	☐	☐	☐	☐
e) Yard	☐	☐	☐	☐
f) New or modern dwelling	☐	☐	☐	☐
g) The price	☐	☐	☐	☐
h) The builder	☐	☐	☐	☐
Location of dwelling				
Home is close to:				
a) Workplace	☐	☐	☐	☐
b) Schools	☐	☐	☐	☐
c) Shopping	☐	☐	☐	☐
d) Public transit	☐	☐	☐	☐
e) Highways or major streets	☐	☐	☐	☐
f) Friends and family	☐	☐	☐	☐

	Very Important	*Somewhat Important*	*Somewhat Unimportant*	*Very Unimportant*
Neighbourhood Features				
a) Parks	☐	☐	☐	☐
b) Trails	☐	☐	☐	☐
c) Woodlands	☐	☐	☐	☐
d) Naturalized areas (buffers, ponds, woods, etc.)	☐	☐	☐	☐
Other considerations				
a) Prestige of the neighbourhood	☐	☐	☐	☐
b) Lack of traffic congestion	☐	☐	☐	☐
c) Safe neighbourhood	☐	☐	☐	☐
d) Quiet neighbourhood	☐	☐	☐	☐
e) Type of neighbours	☐	☐	☐	☐
f) Away from commercial development	☐	☐	☐	☐

Now we would like to ask you about some of the things you may have come to like or dislike about this neighbourhood since coming to live here.

13. Overall, on a scale of one to ten, with ten being most happy and one being least happy, how happy or unhappy are you with your decision to move to this neighbourhood?

Happy	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	**Unhappy**
	10	9	8	7	6	5	4	3	2	1	

14. What are some of the things you like or dislike about this neighbourhood?

	Definitely like	*Somewhat like*	*Somewhat dislike*	*Definitely dislike*
a) Lot sizes	☐	☐	☐	☐
b) Slopes and grades	☐	☐	☐	☐
c) Architecture	☐	☐	☐	☐
d) Road and sidewalk layout	☐	☐	☐	☐
e) Parking	☐	☐	☐	☐
f) Playgrounds	☐	☐	☐	☐
g) Greenspaces	☐	☐	☐	☐
h) Distance between houses	☐	☐	☐	☐
i) Neighbours	☐	☐	☐	☐
j) Frontage	☐	☐	☐	☐
k) Size of front yard	☐	☐	☐	☐

15. In terms of the following features which do you feel are good, about right, not so good or a serious problem for this neighbourhood?

	Good	*About right*	*Not so good*	*A serious problem*
a) Traffic	☐	☐	☐	☐
b) Parking	☐	☐	☐	☐
c) Shopping	☐	☐	☐	☐
d) Parks and recreation	☐	☐	☐	☐
e) Greenspaces	☐	☐	☐	☐
f) Noise	☐	☐	☐	☐
g) Access to public transit	☐	☐	☐	☐
h) Availability of community facilities	☐	☐	☐	☐
i) Paths and trails	☐	☐	☐	☐
j) Community safety	☐	☐	☐	☐

These questions have to do with the sense of belonging you may or may not feel for this neighbourhood.

16. In your opinion, what best describes this neighbourhood?
    - ☐ Friendly and tight knit
    - ☐ Neighbourly and polite
    - ☐ Distant and private

17. Compared to the community of your <u>previous</u> home, would you say this neighbourhood is:
    - ☐ More friendly/neighbourly than previous area
    - ☐ About the same as previous area
    - ☐ More distant and private than previous area

18. If you were to estimate how many people from the neighbourhood (children and adults) outside your own household you feel you know by name; approximately how many people do you think this would be?
    - ☐ None
    - ☐ 1-2
    - ☐ 3-6
    - ☐ 7-10
    - ☐ 11-15
    - ☐ 16-20
    - ☐ More than 20

19. Overall how strongly do you feel a sense of belonging to your neighbourhood?
- ☐ Very strong sense of belonging to the neighbourhood
- ☐ Somewhat strong sense of belonging to the neighbourhood
- ☐ Neither strong nor weak sense of belonging to the neighbourhood
- ☐ Somewhat weak sense of belonging to the neighbourhood
- ☐ Very weak sense of belonging to the neighbourhood

20. In terms of the sense of belonging you have for this neighbourhood, how important is each of the following neighbourhood features in contributing to this feeling?

	Very Important	*Somewhat Important*	*Somewhat Unimportant*	*Very Unimportant*
a) Schools	☐	☐	☐	☐
b) Churches, synagogues, mosques, temples	☐	☐	☐	☐
c) Recreational facilities	☐	☐	☐	☐
d) Playgrounds	☐	☐	☐	☐
e) Shopping areas	☐	☐	☐	☐
f) Parks and greenspaces	☐	☐	☐	☐
g) Architecture	☐	☐	☐	☐
h) Road and sidewalk layout	☐	☐	☐	☐
i) Neighbourhood location	☐	☐	☐	☐
j) Type of people living here	☐	☐	☐	☐
k) Historical features	☐	☐	☐	☐
l) Other (Please describe)	☐	☐	☐	☐

_____
_____
_____

21. Does this neighbourhood have a Neighbourhood Association?
☐ Yes ☐ No ☐ Don't Know

22. What is your level of interest in participating in Neighbourhood Association activities?
☐ Low ☐ Medium ☐ High

23. Have you ever attended a Neighbourhood Association meeting or activity?
a) in this neighbourhood? ☐ Yes ☐ No
b) in your previous neighbourhood? ☐ Yes ☐ No

Part B: Greenspaces

These questions ask you about greenspaces in your neighbourhood. This includes areas like forests, ponds and streams, trails, greenbelts and other naturalized features of the neighbourhood.

1. Overall, how would you rate your neighbourhood with respect to the quality of its public greenspaces?
   ☐ Excellent ☐ Good ☐ Fair ☐ Poor

2. In general, how concerned are you about the protection of environmental features in your community such as forests, ponds, creeks, greenbelts and other natural areas?
   ☐ Very concerned
   ☐ Somewhat concerned
   ☐ Somewhat unconcerned
   ☐ Very unconcerned

3. How important are each of the following greenspace features in adding to your sense of enjoyment for living in this neighbourhood?

	Very Important	*Somewhat Important*	*Somewhat Unimportant*	*Very Unimportant*
a) Parkettes/playgrounds	☐	☐	☐	☐
b) Forests	☐	☐	☐	☐
c) Natural buffers	☐	☐	☐	☐
d) Trails	☐	☐	☐	☐
e) Ponds	☐	☐	☐	☐
f) Creeks	☐	☐	☐	☐

4. In terms of the various features that go together to make a neighbourhood, including schools, places of worship, shopping areas, recreational facilities, one's neighbours and many other things, how important would you say greenspace is for you wanting to live in this neighbourhood?
   ☐ More important than most other neighbourhood features
   ☐ Neither more nor less important than most other neighbourhood features
   ☐ Less important than most other neighbourhood features

5. In terms of helping to improve the quality of life for people in this neighbourhood, what would you say has been the influence of greenspaces with respect to each of the following?

	Very Positive	*Somewhat Positive*	*No Difference*	*Somewhat Negative*	*Very Negative*
a) Children playing	☐	☐	☐	☐	☐
b) Sports activities	☐	☐	☐	☐	☐
c) Walking	☐	☐	☐	☐	☐
d) Cycling	☐	☐	☐	☐	☐
e) Reducing driving	☐	☐	☐	☐	☐
f) Getting to know neighbours	☐	☐	☐	☐	☐
g) Neighbourhood social events	☐	☐	☐	☐	☐
h) Neighbourhood clubs and associations	☐	☐	☐	☐	☐
i) Other (please describe)	☐	☐	☐	☐	☐

_____

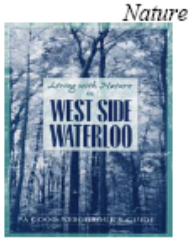
_____

6. In general, to what extent do you perceive the following to be problems associated with your neighbourhood greenspace?

	Definitely a problem	*Probably a Problem*	*Probably Not a Problem*	*Definitely Not a Problem*
a) Trails washed out	☐	☐	☐	☐
b) Wasps	☐	☐	☐	☐
c) Crime	☐	☐	☐	☐
d) Mosquitoes	☐	☐	☐	☐
e) Dogs off leash	☐	☐	☐	☐
f) Steep slopes/grades	☐	☐	☐	☐
g) Hunting/trapping	☐	☐	☐	☐
h) Aggravating allergies	☐	☐	☐	☐
i) Spread of weeds	☐	☐	☐	☐
j) Dog waste	☐	☐	☐	☐
k) Risk of West Nile Virus	☐	☐	☐	☐
l) Cats roaming free	☐	☐	☐	☐
m) Cycling off trails	☐	☐	☐	☐
n) Motorized vehicles	☐	☐	☐	☐
o) Loitering after dark	☐	☐	☐	☐
p) Bush parties	☐	☐	☐	☐
q) Nuisance wildlife (skunks, racoons etc.)	☐	☐	☐	☐
r) Litter/Dumping garbage	☐	☐	☐	☐
s) Digging up plants	☐	☐	☐	☐
t) Capturing wildlife (e.g., frogs)	☐	☐	☐	☐

Part C: Living with Nature Booklet

1. When you moved into this home, did you receive this booklet, called *Living with Nature in West Side Waterloo*?



- ☐ Yes, we received the booklet (Please go to go question #2)
- ☐ No, we did not receive the booklet
- ☐ Cannot say/ Don't know if we received the booklet

2. Please answer the following if you received the booklet:

2a. Did you read the booklet ☐ Yes ☐ No

2b. How informative did you find the booklet?
- ☐ Very informative
- ☐ Somewhat informative
- ☐ Somewhat uninformative
- ☐ Very uninformative

2c. Prior to reading the booklet, were you aware of the environmental features of the neighbourhood?

- ☐ Very aware
- ☐ Somewhat aware
- ☐ Somewhat unaware
- ☐ Very unaware

2d. Did your appreciation of the natural features within the neighbourhood change as a result of reading the booklet?

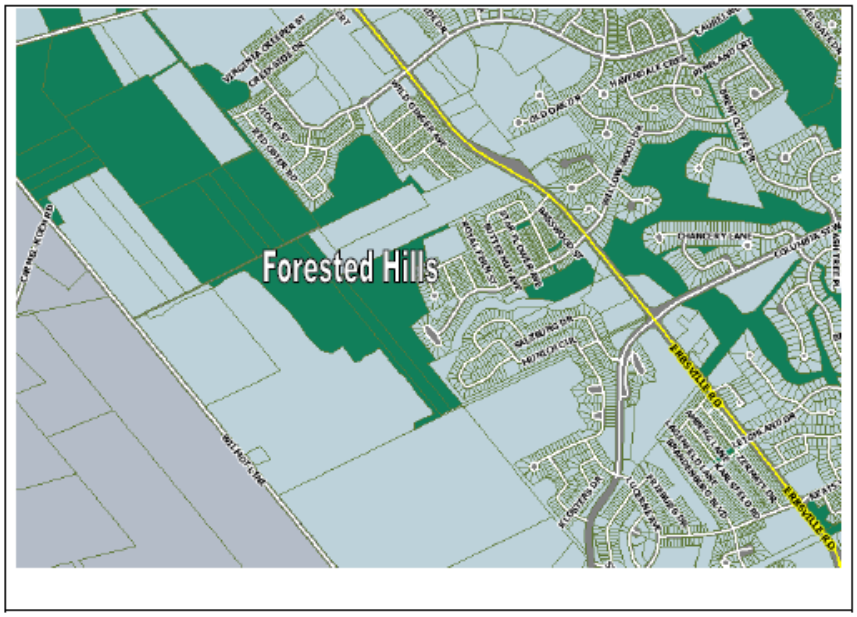
- ☐ Definitely Yes
- ☐ Probably Yes
- ☐ Probably Not
- ☐ Definitely Not

2e. Was the booklet helpful or not helpful in terms of your household planning and living in proximity to the natural features of this neighbourhood?
- ☐ Very helpful
- ☐ Slightly helpful
- ☐ Slightly unhelpful
- ☐ Very unhelpful

2f. Do you still have the booklet? ☐ Yes ☐ No

Part D: Neighbourhood Forest

In addition to the various greenspaces, including naturalized areas, trails and ponds, found within the neighbourhoods of Waterloo's west side, this area also includes a large forested region, called Forested Hills. In the following diagram this forest is labelled as the large shaded area to the left of Erbsville Road. These questions ask you about this forest.



1. Do you ever visit this forest?

- ☐ Never
- ☐ Seldom (1-2 times a year)
- ☐ Occasionally (several times a year)
- ☐ Frequently (a few times a month)
- ☐ Often (more than once a week)

2. Forests in Waterloo Region often have restrictions on the types of activities allowed in them in order to help protect the natural environment. For example, this may include natural buffers (greenbelts) restricting entry except through trails or placing limitations on activities like camping or mountain biking. In general, are you aware of any restrictions applying to activities in this forest?

☐ No (If NO, please go to question 4)
☐ Yes ➜(If YES, please answer the following):

2a. In your opinion are the restrictions effective in protecting the forest?
- ☐ Very effective
- ☐ Somewhat effective
- ☐ Somewhat ineffective
- ☐ Very ineffective

2b. Overall, with respect to preserving the environment in this forest, do you agree of disagree it is being well managed?
- ☐ Definitely well managed
- ☐ Definitely well managed
- ☐ Fairly poorly managed
- ☐ Definitely poorly managed

3. Various activities may cause environmental damage to the forest. Do you believe the presence of adjacent neighbourhoods is resulting in damage to the forest?
- ☐ Definitely Yes
- ☐ Probably Yes
- ☐ Probably No
- ☐ Definitely No

4. To what degree do you feel each of the following is or is not a problem in the Forested Hills forest?

	Definitely a Problem	*Probably a Problem*	*Probably Not a Problem*	*Definitely Not a Problem*
a) Damage from free roaming cats or dogs	☐	☐	☐	☐
b) Extensions of lawns & gardens into forest or buffer	☐	☐	☐	☐
c) Spread of chemicals used on lawns and gardens	☐	☐	☐	☐
d) Litter	☐	☐	☐	☐
e) Dumping yard waste	☐	☐	☐	☐
f) Drainage from hot tubs/pools	☐	☐	☐	☐
g) Noise	☐	☐	☐	☐
h) Street or yard lighting	☐	☐	☐	☐
i) Tree cutting or clearing of vegetation	☐	☐	☐	☐
j) Harm to wildlife	☐	☐	☐	☐
k) Storage of objects (e.g., boats, firewood)	☐	☐	☐	☐

Part E: Natural buffer

The design of the west side neighbourhoods also includes a natural buffer, or greenbelt, area which separates the forest from the neighbourhoods. The diagram below shows the typical buffer design.

1. Please give us your opinion on these buffers. To what degree do you agree or disagree with the following statements?

	Definitely Agree	*Somewhat Agree*	*Somewhat Disagree*	*Definitely Disagree*	*Don't Know*
a) They help me appreciate nature.	☐	☐	☐	☐	☐
b) Buffers cause allergic reactions.	☐	☐	☐	☐	☐
c) They are attractive.	☐	☐	☐	☐	☐
d) They provide homes for birds and other wildlife.	☐	☐	☐	☐	☐
e) Trails located in the buffers are safer than those in the woods.	☐	☐	☐	☐	☐
f) The mosquitoes which can carry West Nile Virus can be found there.	☐	☐	☐	☐	☐
g) They are effective for preventing intrusion into the forest.	☐	☐	☐	☐	☐
h) They provide privacy for those who live beside the trails.	☐	☐	☐	☐	☐
i) They promote the spread of weeds.	☐	☐	☐	☐	☐
j) They provide linkages between environmental areas for wildlife.	☐	☐	☐	☐	☐
k) They protect sensitive areas.	☐	☐	☐	☐	☐
l) They attract wasps and bees.	☐	☐	☐	☐	☐

Part F: Neighbourhood Ponds

In this section we ask you about storm water management (SWM) ponds in your neighbourhood. These are ponds that have been constructed as part of the neighbourhood's development. Their purpose is to capture rainwater and snowmelt runoff and store it temporarily until it can be released slowly into the storm water drainage system. This helps to reduce pollution, as well as erosion to creeks and flooding downstream. There are several of these ponds located within Waterloo's west side. Below are photographs of two such ponds

Picture of a newly constructed Storm Water Management Pond

Picture of a mature Storm Water Management Pond

1. Were you aware or unaware that the presence of storm water management ponds located in Waterloo's west side?

- ☐ Very aware
- ☐ Somewhat aware
- ☐ Somewhat unaware
- ☐ Very unaware

2. Were you aware or unaware of the purpose of these ponds is to control rainwater and snowmelt runoff?

- ☐ Very aware
- ☐ Somewhat aware
- ☐ Somewhat unaware
- ☐ Very unaware

3. Overall, do you consider storm water management ponds to be a positive or negative feature of the west side neighbourhoods?

- ☐ Very positive
- ☐ Somewhat positive
- ☐ Neither positive nor negative
- ☐ Somewhat negative
- ☐ Very Negative

4. Please answer the following with respect to storm water management ponds by stating whether you agree or disagree with each statement.

	Definitely Agree	*Somewhat Agree*	*Somewhat Disagree*	*Definitely Disagree*
a) They are a visually attractive neighbourhood feature.	☐	☐	☐	☐
b) They are a safety hazard for children.	☐	☐	☐	☐
c) Their vegetation helps break down pollution from roads.	☐	☐	☐	☐
d) They contribute to mosquito problems in the spring and summer.	☐	☐	☐	☐
e) They help prevent flooding.	☐	☐	☐	☐
f) They are a source of nuisance from wildlife.	☐	☐	☐	☐
g) They are good for skating on in the winter.	☐	☐	☐	☐
h) They should be more attractively landscaped.	☐	☐	☐	☐
i) They promote a healthier environment.	☐	☐	☐	☐
j) We would not like to live next to one.	☐	☐	☐	☐

Part G: Trails

Another neighbourhood feature is the trail system. These are trails included in the neighbourhood design (other than sidewalks or bike lanes on roadways) intended for walking, jogging or cycling around the neighbourhood and the forest.

1. How often do you use these trails?
   - ☐ Never
   - ☐ Seldom (1-2 times a year)
   - ☐ Occasionally (several times a year)
   - ☐ Frequently (a few times a month), depending on the season
   - ☐ Often (more than once a week), depending on the season

2. For which activities do you use the trails?
   - ☐ Walking
   - ☐ Biking
   - ☐ Jogging
   - ☐ Skiing
   - ☐ Other (please describe)

     _____

3. To what extent do you approve or disapprove of trails being included as part of the neighbourhood design?
   - ☐ Strongly approve
   - ☐ Moderately approve
   - ☐ Moderately disapprove
   - ☐ Strongly disapprove

4. When you visit this forest do you venture off the trails and into the forest?
   ☐ Often ☐ Sometimes ☐ Rarely ☐ Never ☐ Don't use the forest trails

Part H: Transportation

These questions refer to transportation.

1. Since you moved into this neighbourhood would you say you rely more or less on your car compared to the previous place you lived?

   ☐ Much more ☐ More ☐ Same ☐ Less ☐ Much Less

2. Since moving into this neighbourhood would you say you are more or less physically active compared to the previous place you lived? For instance do you find yourself walking, jogging, or cycling more or less often than in your last neighbourhood?

   ☐ Much more ☐ More ☐ Same ☐ Less ☐ Much Less

3. How many cars or other motor vehicles are owned or leased by members of this household?

   _____ Number of motor vehicles

4. Who in this household uses public transportation? (Please check all that apply)
   - ☐ No one
   - ☐ Other adults
   - ☐ Children and/or teens
   - ☐ Myself → How often do you use public transportation?
     - ☐ 1-2 times a year
     - ☐ Several times a year
     - ☐ A few times a month
     - ☐ More than once a week

5. During a typical week there are various destinations such as school, work and the grocery store. For these types of routine trips what method of transportation do you usually use and what approximate percentage of your total travel does this represent? Please ensure your percentages add up to 100%. For instance 60% of the time I travel by car, 10% by bicycle etc…adding to 100%.

   ____% Car
   ____% Public Transportation
   ____% Bicycle
   ____% Walking
   ____% Carpool with others from my household
   ____% Carpool with others not from my household
   ____% Other
   100%

Part I: Opinions

These questions ask your opinion on a variety of things. Please indicate whether you agree or disagree with each statement.

	Strongly Agree	*Agree*	*Disagree*	*Strongly Disagree*
a) The environmental features really didn't influence our decision to move here.	☐	☐	☐	☐
b) The neighbourhood is well designed to accommodate the number of cars.	☐	☐	☐	☐
c) The way streets and sidewalks are laid out encourages people to go for walks.	☐	☐	☐	☐
d) If we had to move from this neighbourhood, I would miss the greenspaces.	☐	☐	☐	☐
e) I would like to become more involved with neighbourhood groups.	☐	☐	☐	☐
f) The presence of the environmental features makes this neighbourhood a special place.	☐	☐	☐	☐
g) A problem for this neighbourhood is the houses are too close together.	☐	☐	☐	☐
h) Protecting greenspaces should be a priority for the City of Waterloo, even if it means increasing taxes.	☐	☐	☐	☐
i) I appreciate the natural environment more since coming to live here.	☐	☐	☐	☐
j) The more I can do to help the neighbourhood become a great place to live, the better.	☐	☐	☐	☐
k) Living in this neighbourhood has made a difference in our lives, for the better.	☐	☐	☐	☐
l) There are more negatives associated with the greenbelt buffers than positives.	☐	☐	☐	☐
m) Taxes in Waterloo are high enough and more are not needed to protect the environment.	☐	☐	☐	☐
n) Living in this neighbourhood there is less need to drive.	☐	☐	☐	☐
o) This is a neighbourhood where it is easy to meet people.	☐	☐	☐	☐
p) The neighbourhood doesn't give the impression of being crowded.	☐	☐	☐	☐
q) Cats running free aren't really a threat to wildlife.	☐	☐	☐	☐
r) Since coming to live here, I feel I would like to do more to protect the environment.	☐	☐	☐	☐
s) The environmental features of the neighbourhood are helping people get to know one another better.	☐	☐	☐	☐
t) I would be willing to accept a tax increase if I knew it would be used to conserve the environment.	☐	☐	☐	☐

	Strongly Agree	*Agree*	*Disagree*	*Strongly Disagree*
u) If there were fewer cars the neighbourhood would be a lot better off.	☐	☐	☐	☐
v) Living here really makes you want to go and enjoy the outdoors.	☐	☐	☐	☐
w) The neighbourhood's paths and trails are a bad idea because they encourage crime.	☐	☐	☐	☐
x) There is no way the environmental features will be preserved with so many people living close by.	☐	☐	☐	☐
y) The city's Environment First policy isn't grounds for increasing taxes.	☐	☐	☐	☐
z) To me this is just a neighbourhood like any other, with nothing special about it.	☐	☐	☐	☐

Part J: Background

Finally, please tell us a bit more about yourself.

1. Are you male or female?

   ☐ Male ☐ Female

2. Please describe this household.

   ☐ Single adult living alone
   ☐ Single adult with child or children
   ☐ Two or more unattached adults
   ☐ Other (please describe)
   ☐ Adult couple living alone
   ☐ Adult couple with child or children
   ☐ Three of more related adults

   _____

3. Please provide the age for each person living in this household?

Yourself	Person 2	Person 3	Person 4	Person 5	Person 6	Person 7	Person 8
____	____	____	____	____	____	____	____

4. What is your educational background?

   ☐ Some grade school or high school
   ☐ High School Diploma
   ☐ Some College/or technical school
   ☐ College/Technical School Diploma
   ☐ Some University
   ☐ University bachelor's degree
   ☐ University professional degree (e.g. MD, LLB, MBA)
   ☐ University Graduate Degree (e.g. M.A., M.Sc., PhD)
   ☐ Other (please explain)

   _____
   _____

5. Approximately what was your total household income for 2004? Please check the category containing your household's total income before taxes for 2004.

- ☐ $25, 000 or less
- ☐ $25,001 - $40,000
- ☐ 40,001 - $60,000
- ☐ $60, 001 - $75,000
- ☐ $75,001 - $90,000
- ☐ $90,001 - $110,000
- ☐ $110,001 - $120,000
- ☐ $121,000 - $135,000
- ☐ More than $135,000

This completes the questionnaire. Thank you very much for your cooperation. If there is anything further you would like to add, please feel free to do so in the space below. Please return the questionnaire, in the postage paid envelope provided.

APPENDIX B – Kitchener Waterloo Area Survey

In this section we would like to ask you about parks and greenspaces in your neighbourhood. These areas include municipal parks, parkettes and playgrounds, as well as other public greenspaces, such as trails, vegetative buffers, woodlands, ponds, creeks, streams or other naturalized features of your neighbourhood open to public use.

(1) Overall, how would you rate your neighbourhood with respect to the quality of its public greenspaces?

____ Excellent ____ Good ____ Fair _____ Poor

(2) How important are each of the following greenspace features in adding to your sense of enjoyment for living in this neighbourhood? (If your neighbourhood does not contain the feature, circle Does Not Apply.)

	Very Important	Somewhat Important	Somewhat Unimportant	Very Unimportant	Does Not Apply
(a) Parks and playgrounds	4	3	2	1	DNA
(b) Woodlands or forests	4	3	2	1	DNA
(c) Vegetative buffers	4	3	2	1	DNA
(d) Trails	4	3	2	1	DNA
(e) Pond	4	3	2	1	DNA
(f) Creek or river	4	3	2	1	DNA

(3) In terms of the various features that go together to make a neighbourhood, including schools, churches, shopping areas, recreational facilities, one's neighbours and many other things, how important would you say greenspace is for you wanting to live in this neighbourhood?

_____ More important than most other neighbourhood features
_____ Neither more or less important than most other neighbourhood features
_____ Less important than most other neighbourhood features

(4) In terms of helping to improve the quality of life for people in this neighbourhood, what would you say has been the influence of greenspaces with respect to each of the following?

	Very Positive	Somewhat Positive	No Difference	Somewhat Negative	Very Negative
(a) Children playing	+2	+1	0	-1	-2
(b) Sports activities	+2	+1	0	-1	-2
(c) Walking	+2	+1	0	-1	-2
(d) Cycling	+2	+1	0	-1	-2
(e) Reducing driving	+2	+1	0	-1	-2
(f) Getting to know neighbours	+2	+1	0	-1	-2
(g) Neighbourhood social events	+2	+1	0	-1	-2
(h) Neighbourhood clubs and associations	+2	+1	0	-1	-2
(i) Other (please describe)	+2	+1	0	-1	-2

_____

(5) Residents often vary with respect to how strongly they feel a sense of belonging to their neighbourhood. Please check the response below which best describes your own feeling of belonging to your neighbourhood.

_____ Very strong sense of belonging to the neighbourhood
_____ Somewhat strong sense of belonging to the neighbourhood
_____ Neither strong nor weak sense of belonging to the neighbourhood
_____ Somewhat weak sense of belonging to the neighbourhood
_____ Very weak sense of belonging to the neighbourhood

(6) In terms of the sense of belonging you have for this neighbourhood, how important are each of the following neighbourhood features in contributing to this feeling?

		Very Important	Somewhat Important	Somewhat Unimportant	Very Unimportant
(a)	Schools	4	3	2	1
(b)	Churches	4	3	2	1
(c)	Recreational facilities	4	3	2	1
(d)	Playgrounds	4	3	2	1
(e)	Shopping areas	4	3	2	1
(f)	Parks and greenspaces	4	3	2	1
(g)	Housing design	4	3	2	1
(h)	Road and sidewalk layout	4	3	2	1
(i)	Neighbourhood location	4	3	2	1
(h)	Type of people living here	4	3	2	1
(i)	Historical features	4	3	2	1
(j)	Other (Please describe)	4	3	2	1

_____

Community trails (other than sidewalks or bike lanes on roadways) intended for walking, jogging or cycling through, or around, the neighbourhood are now found in many neighbourhoods.

(7) Are there any trails for pedestrian or cycling use in this neighbourhood?

_____ No ➜(Please go to Question 8)
_____ Yes ➜(If YES, please answer the following):

7a. How often do you use one or more of these trails?
____ Never
____ Seldom (1-2 times a year)
____ Occasionally (several times a year)
____ Frequently (a few times a month)
____ Often (more than once a week)

7b. To what extent do you approve or disapprove of trails being included as part of the neighbourhood design?
____ Strongly approve
____ Moderately approve
____ Moderately disapprove
____ Strongly disapprove

Some neighbourhoods border on natural forests or conservation areas. These areas form a large natural feature close to the neighbourhood which is not intended for commercial or housing development, but which typically allow some public access for recreation, leisure or nature appreciation.

(8) Does your neighbourhood include proximity to a large natural forest or conservation area?

_____ No ➜(Please go to question 9)
_____ Yes ➜(If YES, please answer the following):

8a. Do you ever visit this forest or naturalized area?

____ Never
____ Seldom (1-2 times a year)
____ Occasionally (several times a year)
____ Frequently (a few times a month)
____ Often (more than once a week)

8b. These areas typically have some restrictions with respect to uses which may potentially cause harm to the natural environment or wildlife. For example, this may include vegetative buffers restricting entry except through approved access points, or placing limitations on certain activities like camping or mountain biking. In general, are you aware of any restrictions applying to the forest or conservation area near your neighbourhood intended to protect the environment?

____ No
____ Yes ➜(If YES, please answer the following):

8c. In your opinion are the restrictions effective in protecting the environment?

____ Very effective
____ Somewhat effective
____ Somewhat ineffective
____ Very ineffective

8d. Overall with respect to preserving the natural environment in the forest or conservation areas near you, do you agree or disagree it is being well managed?

____ Definitely well managed
____ Fairly well managed
____ Fairly poorly managed
____ Definitely poorly managed

(9) How long is it that you have lived in this neighbourhood? (Please give number of years lived in the neighbourhood, or the year you moved into the neighbourhood.)

Years lived in neighbourhood: _____ OR Year moved to neighbourhood: _____
☐ Check here if less than one year

(10) Please describe this household.

____ Single adult living alone
____ Single adult with child or children
____ Two or more unattached adults
____ Adult couple living alone
____ Adult couple with child or children
____ Other (please describe)
_____

(11) Please provide the age for each person living in this household?

_____ _____ _____ _____ _____ _____